IBM Tealeaf CX
Version 9 Release 0.2
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Tealeaf CX Upgrade Manual

Note
Before using this information and the product it supports, read the information in "Notices" on page 69.

This edition applies to version 9, release 0, modification 2 of IBM Tealeaf CX and to all subsequent releases and modifications until otherwise indicated in new editions.

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Tealeaf CX upgrade information

Before beginning the upgrade process, review the new features and fixes that are included in this IBM Tealeaf release.

For a list of new IBM Tealeaf features and fixes that are included in this release, see the *IBM Tealeaf Customer Experience Release Notes*.

Even if you have completed upgrades of Tealeaf® software in the past, it is recommended that you review the entire Upgrade Manual prior to upgrading your Tealeaf system.

As part of your overall upgrade process, you should review and set up your rollback process.

Note: Familiarize yourself with the entire process before you begin it. These upgrade procedures are generalized methods for upgrading the IBM Tealeaf CX Platform, its components, and the associated databases. Some customization of the process is required to match the configuration of most customer installations. For more information, please contact Tealeaf Professional Services.

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Chapter 1. Overview of Upgrade Process

The objective of the upgrade is to minimize downtime and data loss. The recommended approach is to suspend the processing components, letting data spool to disk while the Data Collector collects any unaggregated statistical data. The system can then be upgraded. When it is restarted, it will attempt to work off the spooled data until it catches up.

Note: If you have any questions about the process or the steps required to upgrade your Tealeaf solution, please contact support.

Note: During the actual upgrade of the processing server software in a non-HBR environment, incoming data will be lost, but this approach minimizes that loss. After the processing servers are restarted, the Reporting Server and database upgrades must be completed in a timely manner to avoid getting too far behind.

- Where possible, Tealeaf recommends upgrading using HBR. See "Upgrading with HBR" on page 2.

Note: These general instructions may need to be modified for your installation. Review with Tealeaf Customer Support before attempting the upgrade.

In most environments, Tealeaf's ability to capture all session traffic for a web application performs an important business function. Since Tealeaf is upgraded in place in a real-time environment, it is important to upgrade components in an order that minimizes spooling of data.

- Upgrading individual software components on each Tealeaf server in your environment typically requires running an Upgrader to upgrade all components currently installed on the server.

Upgrade path

The following upgrade paths are available for this version of IBM Tealeaf.

IBM Tealeaf can be upgraded to the current release from versions 8.7 and later. If you are upgrading from a version of Tealeaf that is earlier than version 8.7, you must first upgrade to version 8.7, then upgrade to the current version.

If your IBM Tealeaf environment supports Enhanced International Character Support (EICS), make sure that the release that you are upgrading to also support EICS.

Note: Before you begin upgrading, verify that your system is properly sized for the new version, as the system requirements can change.

Order of Upgrades

The upgrade process follows a specific sequence.

The following sections provide an overview of the upgrade process for IBM Tealeaf.

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1. Upgrade CX platform and core applications

The first step in the upgrade process is to upgrade the IBM Tealeaf CX platform, applications, and the Tealeaf databases.

This upgrade step includes the following applications:

- IBM Tealeaf cxImpact
- IBM Tealeaf cxView
- IBM Tealeaf cxReveal (not including IBM Tealeaf cxReveal database. See "cxReveal Installation" in the *IBM Tealeaf cxReveal Administration Manual*).
- IBM Tealeaf cxConnect for Data Analysis
- IBM Tealeaf cxVerify

This upgrade step applies to the following Tealeaf servers:

- Report Server
- Processing Server (Canister)
- Search Server
- Portal Server
- SQL Server (host of the Tealeaf databases)

Depending on your Tealeaf deployment, these servers may be hosted on a single machine or on multiple machines. Specific steps for upgrading based on the number of servers are provided later in this document.

Upgrading with HBR

In a multi-Processing environment, the potential for data loss is best mitigated in an HBR environment. Health-Based Routing enables the balancing of loads between Processing Servers. When one server is offline, the HBR server redistributes the load, enabling you to upgrade Processing Servers sequentially. If no Processing Server is available, hits are spooled to the storage device on the HBR machine.

- HBR does not apply to environments with a single Processing Server.

Note: When upgrading the IBM Tealeaf CX platform and core applications in multi-Canister environments, Tealeaf recommends using Health-Based Routing to manage load balancing while Canisters are offline during the upgrade.

- HBR requires a separate dedicated machine to run the HBR pipeline. See "Health-Based Routing (HBR) Session Agent" in the *IBM Tealeaf CX Configuration Manual*.

2. Verify functionality of CX platform and core applications

After you complete the upgrade of the IBM Tealeaf CX platform and core applications, you should verify that the upgraded components are properly functioning before you upgrade the other Tealeaf products in your environment.

- See “1. Upgrade CX platform and core applications.”

3. Post-Upgrade Cleanup

After the upgrade has completed, additional tasks may need to be completed.

Update Tealeaf Portal application pool

After you have upgraded IBM Tealeaf, update the application pool settings for Tealeaf in Windows IIS Manager. If you do not update the application pool settings, you might experience an error when you attempt to log in to the Tealeaf Portal. For more information, see "Updating the Tealeaf Application Pool settings" on page 43.

4. Upgrade Other Tealeaf Software

The core upgrade process covers all software that is installed on Windows-based servers that are used by the IBM Tealeaf CX platform and its server-based applications. Other Tealeaf components in your system must be upgraded separately.

Note: Tealeaf recommends performing these upgrades after the upgrades of the core IBM Tealeaf CX components.

- See Chapter 8, "Post-Upgrade Cleanup," on page 43.

Chapter 2. Upgrading and Migrating to New Hardware

If you are deploying new hardware in conjunction with your upgrade, please complete the upgrade in the following general steps.

Note: Before you begin, you should review the system requirements to verify that your current system is capable of managing the upgrade process and running the new version of Tealeaf. See "System requirements for installing IBM® Tealeaf in the *IBM Tealeaf CX Installation Manual*.

General Steps

1. Install the latest IBM Tealeaf version on the new hardware.
2. Migrate your reporting data and event definitions to the new hardware.
3. Restart the new Tealeaf system.
4. Verify that it is capturing data, events are firing, and that newly captured event data is appearing in reports.
5. Review the preparing to upgrade steps. See Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.
6. Perform the upgrade in place.

   Note: Depending on your Tealeaf environment, the steps to upgrade may vary. See Tealeaf CX Upgrade Manual.
7. Complete the post-upgrade steps. See Chapter 8, “Post-Upgrade Cleanup,” on page 43.

Note: Avoid performing the upgrade by installing the current IBM Tealeaf release on the new hardware, moving the databases, and then upgrading them separately.

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Chapter 3. Preparing to Upgrade to the Current Release

To upgrade your IBM TealeafcxImpact solution, review the entire process before you commence the upgrade. The process that you follow varies depending on the number of servers that are deployed in your IBM TealeafcxImpact solution.

Note: If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact IBM Tealeaf support. For more information, see Chapter 11, "IBM Tealeaf documentation and help," on page 67.

Adding or removing products

If you are adding or removing products as part of this upgrade process, Tealeaf recommends that you make these product changes to your current release before upgrading.

The upgrade process requires that you upgrade to release 8.7 before you upgrade to the current release.

When you perform these installs or uninstalls, follow the documented instructions that are provided in the documentation for your installed release.

Note: Products and components that are introduced in the current IBM Tealeaf release cannot be installed to a previous release. New products and components can only be installed after completing the upgrade and migration to the current release.

Upgrade preparation

Upgrade preparation involves performing many tasks as described in the following sections.

Migrating to new hardware

If you are migrating to new hardware as part of this upgrade, there are more instructions.

See Chapter 2, "Upgrading and Migrating to New Hardware," on page 5.

Report Server Time Zone

The time zone for the Windows machine that hosts the Tealeaf Report Server must be configured to match the Tealeaf system time zone.

This requirement may be loosened in a subsequent release.

- See "Configuring the System Timezone" in the *IBM Tealeaf CX Configuration Manual*.
- See "Configuring the Report Server" in the *IBM Tealeaf CX Configuration Manual*.

Perform All Microsoft-Recommended Updates

Before you begin upgrading, you should perform all updates to your Microsoft operating system and SQL Server software.

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.NET Framework 4.5 is required

Tealeaf requires the .NET Framework version 4.5 for the current IBM Tealeaf release.

Note: All Windows-based servers that host Tealeaf software must upgrade to .NET 4.5 before you upgrade to the current IBM Tealeaf release.

Failure to perform the .NET framework update to a supported version results in the Data Collector being unable to start after the upgrade is complete. The following error might be reported in the Event Viewer:

```
An unhandled exception ('System.MissingMethodException') occurred in
TeaLeafDataCollector.exe [3268]. Just-In-Time debugging this exception
failed with the following error:
Debugger could not be started because no user is logged on.
```

Database Migration

If you are upgrading your Tealeaf software and deploying it on new hardware, observe the following considerations:

- For more information about migrating the Tealeaf databases, see "Migrating Tealeaf Databases" in the *IBM Tealeaf Databases Guide*.

Additional tasks

Perform additional tasks for preparing to upgrade as documented here.

Clean up events

If you plan to remove events or event-related objects as part of your upgrade to the current release, Tealeaf recommends that you perform this cleanup task before upgrade.

Removing events or event-related objects accelerates the time to perform the event migration during upgrade.

Review Canister Safety Limits

In Release 7.2 and earlier, the Canister safety limits were controlled by three settings for the Canister.

These settings defined limits for:

- Maximum number of hits in a session
- Maximum total bytes in a session
- Maximum total time in seconds in a session

In Release 8.0 and later, these limits are defined by a Tealeaf system event. During upgrade, the values for these limits are reset to factory defaults.

Before you upgrade, record the values for the Canister safety limits. These settings and their default values are listed below:

Table 1. Review Canister Safety Limits

Setting	Release 7.2	Release 8	Value for Your Tealeaf Solution
Max Hits Per Session	2048	2048	

Table 1. Review Canister Safety Limits (continued)

Setting	Release 7.2	Release 8	Value for Your Tealeaf Solution
`Max Size Per Session`	`5242880` bytes	`5242880` bytes	
`Max Time Per Session`	`3600` seconds	`3600` seconds	

SQL Server on remote server

If the Tealeaf SQL Server databases are on a remote database server, you should validate the full paths to those remote database files beforehand.

Failing to do so can cause problems during the upgrade process. See "CX Installation and Setup" in the *IBM Tealeaf CX Installation Manual*.

Migrating to a new SQL Server instance

If you are migrating to a new instance of SQL Server, more steps are required during the restore process.

See "Troubleshooting - Tealeaf Databases" in the *IBM Tealeaf Troubleshooting Guide*.

Acquire Latest Build

For the release to which you are upgrading, verify that you have the latest build.

For more information, see the Release Notes for your version.

For more information on downloading IBM Tealeaf, see IBM Passport Advantage® Online.

Test Pre-Upgrade System

Before you begin the upgrade, you should verify that your current Tealeaf solution is operational.

The following tests may be used to verify aspects of Tealeaf operations:

1. Run Portal Tests:
   a. From the **Portal** menu, select **Help** > **About IBM Tealeaf CX Portal**.
   b. In the Portal Performance Tests panel, click the **Execute All** link.
   c. When the tests are completed, a `Success` message or a time value should be displayed in the Results column. These messages indicate that the Portal is operational and able to communicate with its required components and the Tealeaf database.
2. Generate Portal Status Report: The Tealeaf Portal Status report can be configured to provide useful status information from Tealeaf databases, servers, and components, including the IBM Tealeaf CX Passive Capture Application. Through the Portal, you can generate one of these reports.
   a. If you have not configured the Portal Status report yet, the Portal uses default settings when it generates the report. For best results, you should configure Portal Status to match your Tealeaf solution.

b. To execute the Portal Status, select **Help** > **Portal Management**.
c. In the Portal Management page, click the **Logs** section in the left navigation panel.
d. Under the Logs heading, click the **View Portal Status** link.
e. The Portal Status report is generated in the Portal.
f. Review the generated report for error or warning conditions.
•

Note: As of Release 8.0, the Portal Status report is deprecated and superseded by the Tealeaf Status report. See "Tealeaf Status Report" in the *IBM Tealeaf cxImpact Administration Manual*.

3. Review Logs:
   a. In the Portal Management page under the Logs heading, you can bundle the Tealeaf logs together in to a `.ZIP` file for external review. Click the **Tealeaf Logs and Configuration Files** link. Save the file locally.
   b. Review each of the compressed log files for `ERROR` or {{_E_}}entries.
   c. You should also review the Windows Event Viewer logs for errors.
4. System Status:
   a. The System Status report allows you to check the status of key components in the Tealeaf system, including Canisters, HBR machines, and storage. To review status reports, select **Tealeaf** > **System Status**.
   b. In the System Status submenu, select a report. Review the report for error conditions, warnings, or problems with capacity or utilization. These issues should be examined and, if possible, addressed before upgrading.
   c. For the selected report, review the subreport for each Tealeaf server in the environment.
   d. Repeat the steps for each type of System Status report.

Showstoppers

If you have error conditions or significant performance problems in any of the following Tealeaf components, do not proceed with the upgrade prior to resolving these issues.

- Tealeaf Reference Utility
  - Before you upgrade, you should verify that your reference values are properly configured and are appearing as expected in reports.
- ResultSet Extractor Service
  - To verify operations of the RSE Service, analyze a session segment that contains many sessions.
- Data Collector must be able to complete collections.
  - To verify operations, select the Collector Statistics tool when the Canister/Indexer is selected in the Portal Management page.
- Verify Customer Support issues
  - If you have any open Customer Support issues, it is a good practice to verify with Customer Support that they do not impact the upgrade.

Copy Files to Each Server

On each Tealeaf server to be upgraded, copy the following files:

- For each Tealeaf IBM Tealeaf CX Passive Capture Application Server:

1. Verify that the machine meets the system requirements and has the installed operating system components. See "Installation" in the *IBM Tealeaf Passive Capture Application Manual*.
2. Copy the OS-appropriate `.rpm` file to the `/root` directory of each PCA server.

- For each Tealeaf server:
  1. Copy the upgrade `.zip` file into a temporary directory on the hard disk drive where the software is to be installed.
  2. Extract the `.zip` file on each server.

Copy event definition files from Event Master server

If the Report Server is hosted on a different machine from the Processing Server (Canister), you must copy the event definition files from the Event Master server to the Report Server before it is upgraded.

Instructions are provided for you during the Report Server upgrade.

- See “Release Upgrade for Reporting Server” on page 27.

Backup

Verify that any scheduled TLBackup backup jobs occurred and completed successfully on last execution.

- Later in the process, you back up the SQL databases before they are upgraded.

Recommended backup

Before you begin, Tealeaf recommends that you perform the following backup operations:

- Complete mirroring of each server that is to be upgraded. The servers where the databases are stored and the Event Master server are the most important.
- Valid backup of all SQL Server databases. For more information, see the SQL Server product documentation.

Upgrade with HBR

Health-Based Routing (HBR) enables effective load balancing and spooling in a multi-Canister environment. If you installed HBR or have an extra server available where you can install HBR, Tealeaf recommends enabling HBR before upgrade and using it as part of your upgrade process. The use of HBR significantly mitigates the potential for data loss during the migration.

- See Chapter 1, “Overview of Upgrade Process,” on page 1.
- For more information about HBR, see "Health-Based Routing (HBR) Session Agent" in the *IBM Tealeaf CX Configuration Manual*.

Event Model Backup

If you are upgrading from Release 8.4 or later, you should perform a backup of your Tealeaf event model, which can be used to restore event definitions to your pre-upgrade system.

- See "Event Model Backup and Restore" in the *IBM Tealeaf cxImpact Administration Manual*.

Data Export

Before you shut down services and upgrade, you can perform the following exports from your Tealeaf system.

Export a dashboard

Through the Tealeaf Portal, export a dashboard for a specific date or week that contains a representative sample of event information.

This dashboard can be used after upgrade to verify that data was successfully migrated.

Note: Avoid exporting for the current date.

1. From the **Dashboards** menu in the Portal, select the dashboard that you wish to export.

   Note: Do not select the Technical Site Metrics dashboard, which is exported in the next step.
2. When the dashboard is displayed, click **Options**. Select **Export/Email Dashboard**.
3. Select the export option of your choice.
4. Click **Entire Dashboard**.
5. The dashboard is exported. Retain this dashboard for review after upgrade.

Export Technical Site Metrics dashboard

Using the same method you used to export the dashboard, export the Technical Site Metrics dashboard.

- From the Portal, select **Dashboard** > **Technical Site Metrics**. Export the dashboard.

  Note: Avoid exporting for the current date.

Export event activity

From the Portal, you should export the Event Activity report from a representative date from all servers.

- Optionally, you might choose to export this report from individual servers, too.

1. From the **Portal** menu, select **Analyze** > **Events** > **Event Activity**.
2. Configure the report to select the appropriate Focus date and servers.

   Note: Avoid exporting for the current date.
3. From the View drop-down, select `List` to display them in alphabetical order.
4. In the upper-right corner, click the **Excel** export icon.
5. The report is exported to Excel. Save it locally. Retain this report for review after upgrade.

Export dashboard and scorecard templates

As a precaution, you should export the dashboard and scorecard templates from your pre-upgrade version of the Portal.

These objects may be reimported after upgrade, in case they are not successfully migrated during the process.

- See "Importing and Exporting Reports" in the *IBM Tealeaf cxView User Manual*.

Getting Started with the Upgrade

When you are ready to begin your upgrade, complete the following steps just before you begin your upgrade.

- Stop traffic: Traffic must be stopped into the Canister.
  1. In HBR environment: If you deployed an HBR server, you can manage traffic through the HBR. See "Stopping Traffic at the HBR."
  2. In non-HBR environment: If you do not use HBR, you can stop traffic through Search Server. See "Stopping Traffic into Each Canister."
- Complete a Data Collector run: Allow one Data Collector run to complete before you begin the upgrade. See "Completing Data Collection" on page 14.

Stopping Traffic at the HBR

In an HBR environment, there is no need to stop traffic. As soon as a Processing Server is no longer available to receive hits, traffic is diverted to other available Processing Servers or spooled locally to the HBR disk until servers become available.

- For more information about HBR, see "Health-Based Routing (HBR) Session Agent" in the *IBM Tealeaf CX Configuration Manual*.

Before you begin the upgrade, verify that the Data Collector completed its run.

- See "Completing Data Collection" on page 14.

Stopping Traffic into Each Canister

Before upgrading, traffic must be stopped into the processing pipeline of each Tealeaf Canister.

After traffic stops and the Data Collector completes a run, the upgrade can be performed.

Note: When traffic is stopped to the Canister pipeline, data is spooled to disk. Each processing server should have sufficient disk space to queue for 30 minutes. If all available disk space is consumed, hits that are forwarded to the Canister are dropped.

For each Processing Server

1. Start an Internet Explorer browser and navigate to the following URL:

   `http://<Machine_Name>:19000`

   where:

   `<Machine_Name>` is the name or IP address of the Processing Server
2. The TeaLeaf Search Server web interface is displayed.
3. In the Governor pane at the lower left, click **Drain STC**. This step forces the Tealeaf pipeline to start queuing data and instructs the Short Term Canister to write out any active sessions to long-term storage.
4. Repeat the steps for each Processing Server before you check for Data Collection completion.

Before you begin the upgrade, verify that the Data Collector completed its run.

- See "Completing Data Collection" on page 14.

Completing Data Collection

After traffic stops and immediately before you begin upgrading your IBM Tealeaf CX platform and core applications, you should verify that the latest execution of the Data Collector is complete.

After you complete the following verification steps, you may begin your upgrade. For more information, see *Data Collector Status* in the *IBM Tealeaf cxImpact Administration Manual*.

Note: If the Data Collector run is not allowed to complete, there will be gaps in your reporting data after the upgrade is complete.

Remove Canister Spool Files

Remove the existing Canister spool files from your existing installation before you upgrade from a version of IBM Tealeaf without EICS to a version of IBM Tealeaf with EICS.

Note: Canister spool files cannot be migrated from an IBM Tealeaf environment that does not have Enhanced International Character Support (EICS) to a version that does support EICS. EICS support is introduced in IBM Tealeaf version 9.0A. If you are upgrading your IBM Tealeaf environment from a version earlier than 9.0A, you must remove any spool files from your existing IBM Tealeaf installation before you begin the upgrade process.

To remove the Canister spool files from your existing IBM Tealeaf installation:

1. Verify that the last execution of the Data Collector is complete. For more information, see "Completing Data Collection."
2. Go to the directory where the spool files are saved.

   The default directory where the spool files are written, is `\<Tealeaf_install_directory>\spool` where `<Tealeaf_install_directory>` is the directory where Tealeaf is installed.

   To verify the location of the spool directory:

   a. Log in to the Tealeaf portal.
   b. Select **Tealeaf** > **TMS**
   c. Select the **WorldView** tab.
   d. Select **Transport Service** > **Transport Service configuration**
   e. Locate **Config Actions** and select **View/Edit (Raw)**.
   f. Locate the `[DecouplEx]` heading in the configuration text. The value of `SpoolDir` displays the spool directory.
3. Delete the Canister spool files. Canister spool files use `.tsp` as the file extension.

Continue with "Next Steps" to continue the upgrade process.

Next Steps

Depending on the number of physical servers and the use of Health-Based Routing (HBR) in your Tealeaf deployment, the upgrade process can be straightforward or more involved.

- All-In-One: If you are upgrading an All-in-One Tealeaf deployment, see Chapter 5, "Release Upgrade for All-in-One Deployment," on page 23.

- Multi-Machine Deployment: If your Tealeaf environment contains multiple Processing Servers, remote Report Servers, or both, or if it uses Health-Based Routing, see Chapter 6, “Upgrade for Multi-Server Deployment,” on page 25.

For more information about Tealeaf architecture, see "Overview of the CX System" in the *IBM Tealeaf CX Installation Manual*.
For more information about HBR, see "Health-Based Routing (HBR) Session Agent" in the *IBM Tealeaf CX Configuration Manual*.

Chapter 4. Upgrading Tealeaf Software on a Server

This section describes how to upgrade Tealeaf software on an individual server. You must repeat this basic process on each Windows-based Tealeaf server in the environment and make adjustments to the process as needed.

Note: If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact support.

Prerequisite checklist

Review the following checklist before beginning the upgrade.

Note: Avoid using `localhost` entries in the Upgrader. Particularly for the Report Server, these entries can corrupt Portal features in the upgraded system.

- These references should be purged from the entries in the Portal Management page before the upgrade is initiated. See Chapter 3, "Preparing to Upgrade to the Current Release," on page 7.

Before you begin, verify that you completed the following items:

- Reviewed the overall process. See Chapter 1, "Overview of Upgrade Process," on page 1.
- Reviewed the changes for Release 8. See Migration to the current release.
- Completed the preparation steps. See Chapter 3, "Preparing to Upgrade to the Current Release," on page 7.
  1. Copied Tealeaf software to each server. For every server that you are upgrading, you should copy the Tealeaf software to a directory outside of the Tealeaf installation directory.
  2. Backed up the server. You should perform a backup of all Tealeaf directories and SQL Server databases on the server before you begin the upgrade of it.
     - Ideally, you should create a complete mirror image of the server.
- Stopped traffic and allowed Data Collector finish: Immediately before upgrade, you must stop traffic to the Processing Servers in your environment and allow the Data Collector to complete its collection that is run from the stopped Canisters. See Chapter 3, "Preparing to Upgrade to the Current Release," on page 7.

Note: For more information about issues that may occur during installation or upgrade, see Upgrading Tealeaf Software on a Server.

You should also know the process for upgrading an individual server, whether you are upgrading only the current components or changing the configuration. See Upgrading Tealeaf Software on a Server.

How to begin

The way to begin the upgrade depends on whether you are performing an upgrade of all components that currently exist on the server and are not adding or removing any Tealeaf components, or if you are changing the configuration of installed components on the server.

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Use the links for steps to perform your specific type of server upgrade:

- If you are performing an upgrade of all components that currently exist on the server and are not adding or removing any Tealeaf components, then you can use the Tealeaf upgrader. See “Running the Tealeaf Upgrader on a Server.”
- If you are changing the configuration of installed components on the server, you must perform an uninstall and a reinstall through the Tealeaf installer. Extra steps might be required. See “Running the Tealeaf Installer to Upgrade a Server” on page 20.

(Optional) Tealeaf Silent Upgrade

If you want to upgrade your Tealeaf databases or you want to perform a first-time installation of the Tracking service, you can use the Tealeaf silent installer to automate the upgrade process. For more information about using the silent installer, see "Tealeaf CX silent installation, uninstallation, and upgrade" and "Upgrading silently" in the *IBM Tealeaf CX Installation Manual*.

Running the Tealeaf Upgrader on a Server

The following process is used to upgrade all Tealeaf services that are deployed on an individual server. During the upgrade of all Tealeaf servers, you use this process on each server one time.

Note: Do not use the Tealeaf Installer to perform a simple upgrade of all components on a Tealeaf server. You should use the Upgrader instead.

To Upgrade a Server:

Note: The same license key must be applied to each server in the Tealeaf environment. If you are adding IBM Tealeaf cxResults to your Tealeaf solution as part of this upgrade, you must have a valid Tealeaf product license key enabling IBM Tealeaf cxResults. Before you begin, please verify that you have acquired the proper key. See "Managing Your Tealeaf License Key" in the *IBM Tealeaf cxImpact Administration Manual*.

Note: Tealeaf recently changed its license key format. If you have not done so already, please acquire a new license key from Tealeaf http://support.tealeaf.com.

Note: Use of UNC paths in the Tealeaf Upgrader is supported only if they reference locations on the local machine.

1. Back up the contents of the Tealeaf Install Directory on the server to a location on a different hard disk drive or a different machine. Retain this location.

   Note: If you receive an error that indicates that `TLREPORTS_EVENTDATA` is being used by another user, the Tealeaf databases are installed within the Tealeaf install directory. You must stop the following service through the Administration console:
   `SQL Server (MSSQLSERVER)`
   Then, execute the copy. After the copy is completed, restart the SQL Server services.

Note: This directory backup does not create an effective backup of the Tealeaf databases. That backup must be executed through your SQL Server administration tools. For more information, see the SQL Server product documentation.

2. From the Tealeaf distribution, copy the following directory to the machine where the upgrade is to be completed. Do **not** copy to the Tealeaf install directory:

   ```
   <software_distribution_directory>\cx\Upgrade_*
   ```

3. Verify that the current run of the Data Collector is complete. See Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.
4. If it is open, close the Windows Event Viewer Control Panel.
5. Open a command-line shell. Navigate to the directory where you stored the Tealeaf upgrade distribution.
6. From the upgrade directory, run `Setup.exe`.

   Note: If prompted for a Tealeaf License key at any point during the upgrade process, enter the value that is provided to you by Tealeaf Support.

   a. Select the language that you want to use for the installation and click **OK**.
   b. The Upgrader checks to see whether an upgrade performed on the machine already. If so, the following message is displayed.

      ```
      An update has already been performed on this system.
      ```

      Note: Choose **Yes** only if you are installing IBM Tealeaf cxResults or IBM Tealeaf cxReveal databases search on the current system. Otherwise, do not upgrade the system.
   c. If the server you are upgrading is a Report Server, extra dialogs may be displayed, including one in which you may choose to perform an event data migration to the new version or a migration of all data.

      Note: Migration of all of your existing data may take significant time. Tealeaf recommends that you perform this migration during off-peak hours through the Tealeaf Database Manager. See "Tealeaf Database Manager Reference" in the *IBM Tealeaf Databases Guide*.

      Note: During the upgrade of the Report Server, you may optionally choose to migrate reference dimensions and their data. This data is not migrated by default. See “Release Upgrade for Reporting Server” on page 27.

      - For more information, see Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.
      - For more information about Report Server upgrading, see “Release Upgrade for Reporting Server” on page 27.

   d. If prompted for the TMS server at any point during the upgrade process, enter the machine name of the TMS master.
   e. On the Welcome screen, click **Next**.
   f. On the Upgrade screen, the list of components to upgrade is displayed. Click **Yes**.
   g. If your pre-upgrade system does not include IBM Tealeaf cxResults or IBM Tealeaf cxReveal, the Upgrader may prompt you to choose to install these products.
   h. If your pre-upgrade system does not include a Tracking Service, the Upgrader displays a window asking `"Do you want to configure Tracking Service?"`.

The Tracking Service tracks Replay Server logging information and delivers the logging data to Browser Based Replay (BBR). Configure the Tracking Service if administrators need access to real-time page load logging information in BBR. For information about real time page load logging, see the *IBM Tealeaf cxImpact Administration Manual*.

If you do not want to create a configuration for the Tracking Service, click **No**.

If you want to create a configuration for the Tracking Service, click **Yes**. The Upgrader presents a configuration window in which you specify a Server and Port. The server and port information you enter is applied to the common registry used by IBM Tealeaf Servers.

Note: The registry is still available inside Tracking Service component, but other services look at the same registry location.

i. The upgrade process begins, during which the following occurs:
   - Install the Microsoft Redistributes.
   - Transfer files.
   - The Canister is rebuilt, while preserving session data. This process may take 5-10 minutes to complete. While this process is occurring, you may restart the other Canisters in the environment.

     Note: If you are upgrading the Portal Server, the Upgrader automatically disables the Interactive Services Detection service, which causes conflicts with the BBR rendering instances. See "CX Pre-Installation Checklist" in the *IBM Tealeaf CX Installation Manual*.

j. In the Finish screen, deselect the option to Start Tealeaf Services.

k. Click **OK/Done**.

7. Restart the Windows server.
   - The Data Collector resumes collection automatically.
8. When the server has restarted, check the Event Log for Error-type messages.
   - Ignore error messages that state failure to connect to the TMS Master.

Running the Tealeaf Installer to Upgrade a Server

If you are changing the configured components that are installed on an individual server, then you must uninstall all current components and then reinstall the wanted components through the Tealeaf Installer for the upgrade version.

Note: If you are upgrading all of the current components on the server and are not making changes to these components, do not use the Tealeaf Installer. Use the Tealeaf Upgrader instead. See “Running the Tealeaf Upgrader on a Server” on page 18.

- The Tealeaf Upgrader manages the installation of IBM Tealeaf cxResults and IBM Tealeaf cxReveal.

Note: Tealeaf recently changed its license key format. If you have not done so already, acquire a new license key from Tealeaf http://support.tealeaf.com.

Note: If you are uninstalling and reinstalling Tealeaf software on a server that hosts the Report Server, the Tealeaf databases are uninstalled and reinstalled as part of the process. Before you begin, execute or verify a current backup of the Tealeaf databases.

Note:

- Back up the Tealeaf directory. Mirror the entire server, if possible.
- Before you begin, identify the components that are going to be installed on this server. During the installation process, you must select from the following available components:
  - **IBM Tealeaf CX Components** - base IBM Tealeaf CX Impact platform
    - Transport Service
    - Processor Service
  - Report Server and Portal Application
- If you are changing components, you need a new license key to complete the installation. For more information, contact http://support.tealeaf.com.

Uninstall

- If you have not done so already, download the IBM Tealeaf CX Impact `zip` file from the distribution. Extract it in a directory on the server that is not within the Tealeaf installation directory.
- Before you begin, you must stop all Tealeaf services, including the ones that cannot be stopped through the menu. You also backed up the Tealeaf installation directory on the server.
  - For more information, see the first few steps of “Running the Tealeaf Upgrader on a Server” on page 18.
- From the downloaded package, run `setup.exe`.
- When prompted, choose to uninstall.
- The uninstall is completed.

To re-install:

- Acquire the necessary license key and server information before you begin.
- Rerun `setup.exe`.
- For more information about the individual steps, see "CX Installation and Setup" in the *IBM Tealeaf CX Installation Manual*.

Troubleshooting during Upgrading

If you encounter issues during the execution of the Tealeaf Upgrader, review the steps documented here.

Note: Do not attempt to rerun the Upgrader. Rerunning the Upgrader corrupts the system.

Note: Do not attempt to manually manipulate data files to resolve upgrade issues.

Event migration failure

Note: If event definitions do not successfully migrate during upgrading of the Report Server, Processing Servers cannot be restarted, and they continue to spool data. To prevent filling the spool space on disk and dropping of hits, this issue should be addressed as soon as possible.

Review Logs

Review the following logs for `ERROR` or `_E_` entries:

- Tealeaf Installation and Upgrader log:
  `<Tealeaf_install_directory>\Logs\TeaLeafInstall_BBBB.log`
- Event Manager log:
  `<Tealeaf_install_directory>\Logs\TLEventManagerYYYYMMDD.log`
- Tealeaf Database Manager log:
  `<Tealeaf_install_directory>\Logs\TeaLeafDatabaseManagerYYYYMMDD_*.log`

Note: For any upgrade issues, Tealeaf Customer Support requires these log files.

See Chapter 8, "Post-Upgrade Cleanup," on page 43.

Chapter 5. Release Upgrade for All-in-One Deployment

This section describes the general process for upgrading an All-In-One Tealeaf server. In these configurations, all Tealeaf components are installed on the same physical system.

Note: If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact support.

Review the entire process before you begin the upgrade.

Prerequisite Checklist

Before you begin, verify that you completed the items on the prerequisite checklist, as documented here.

1. Reviewed the overall process. See Chapter 1, "Overview of Upgrade Process," on page 1.
2. Reviewed the changes for the current release. See Migration to the current release.
3. Completed the preparation steps. See Chapter 3, "Preparing to Upgrade to the Current Release," on page 7.
   a. Copied Tealeaf software to each server. For every server that you are upgrading, you should copy the Tealeaf software to a directory outside of the Tealeaf installation directory.
   b. Backed up the server. You should perform a backup of all Tealeaf directories and SQL Server databases on the server before you begin the upgrade of it.
      - Ideally, you should create a complete mirror image of the server.
4. Stopped traffic and allowed Data Collector finish: Immediately before upgrade, you must stop traffic to the Processing Servers in your environment and allow the Data Collector to complete its collection run from the stopped Canisters. See Chapter 3, "Preparing to Upgrade to the Current Release," on page 7.

Note: For more information about issues that may occur during installation or upgrade, see Chapter 4, "Upgrading Tealeaf Software on a Server," on page 17.

You should also know the process for upgrading an individual server, whether you are upgrading only the current components or changing the configuration. See Chapter 4, "Upgrading Tealeaf Software on a Server," on page 17.

1. Stop Services

Stop all Tealeaf Services on the server that is being upgraded.

1. Log in to the server as an administrator.
2. Stop all Tealeaf Services:
   `Start > Programs > Tealeaf Technology > Stop All Services`
   or
   `Start > Programs > Tealeaf Technology > Stop Tealeaf Services`
3. Wait until all services stop.
4. Open the Windows Services applet and manually stop all remaining services whose name begins with `Tealeaf`, including the following.

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- Tealeaf Scheduler Service
- Tealeaf Transport Service
- Tealeaf Management Service

5. Close the Windows Services Control Panel.
6. If it is open, close the Windows Event Viewer Control Panel.
7. When these services are stopped, you may continue.

2. Upgrade Tealeaf Software

If your upgrade process includes a migration to a new SQL Server, see "Migrating Tealeaf Databases" in the *IBM Tealeaf Databases Guide*.

For more information about upgrading Tealeaf software, including databases on an All-in-One server, see Chapter 4, “Upgrading Tealeaf Software on a Server,” on page 17.

3. Restart Services

After upgrading the Tealeaf software, you must restart the Tealeaf services.

To restart the services:

1. For each server, you can start all services through the Windows Start menu:
   `Start menu > Programs > Tealeaf Technology > Start Tealeaf Services`
2. When the server restarts, check the Event Log for Error-type messages.

Post-Upgrade Cleanup

After completing the upgrade, you can perform a few cleanup tasks.

See Chapter 8, “Post-Upgrade Cleanup,” on page 43.

Perform Other Tealeaf Upgrades

After you complete the upgrade of the IBM Tealeaf CX platform and core applications, you may upgrade your other Tealeaf applications and components.

- See Chapter 1, “Overview of Upgrade Process,” on page 1.

Chapter 6. Upgrade for Multi-Server Deployment

The steps in this upgrade process provide a generalized outline for how to complete an upgrade of a sophisticated multi-machine installation of Tealeaf. For these types of upgrades, services must be stopped in a specific order after which individual Tealeaf servers must be upgraded in the order that is listed.

Note: If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact http://support.tealeaf.com.

Review the entire process before you begin the upgrade.

Prerequisite checklist

Before you begin, verify that you completed the prerequisite checklist items documented here.

1. Reviewed the overall process. See Chapter 1, "Overview of Upgrade Process," on page 1.
2. Reviewed the changes for the current release. See Migration to the current release.
3. Completed the preparation steps. See Chapter 3, "Preparing to Upgrade to the Current Release," on page 7.
   a. Copied Tealeaf software to each server. For every server that you are upgrading, you can copy the Tealeaf software to a directory outside of the Tealeaf installation directory.
   b. Backed up the server. You can perform a backup of all Tealeaf directories and SQL Server databases on the server before you begin the upgrade of it.
      - Ideally, you should create a complete mirror image of the server.
4. Stopped traffic and allowed Data Collector finish: Immediately before upgrade, you must stop traffic to the Processing Servers in your environment and allow the Data Collector to complete its collection run from the stopped Canisters. See Chapter 3, "Preparing to Upgrade to the Current Release," on page 7.

Note: For more information about issues that may occur during installation or upgrade, see Chapter 4, "Upgrading Tealeaf Software on a Server," on page 17.

You should also know the process for upgrading an individual server, whether you are upgrading only the current components or changing the configuration. See Chapter 4, "Upgrading Tealeaf Software on a Server," on page 17.

1. Stop Services

Stop all Tealeaf Services on the servers being upgraded.

Note: If the Tealeaf Data Collector and Reporting services are on a different machine than the Processing Servers, allow the Data Collector to complete its run. Then, stop all Tealeaf services on the Report Server machine first, if you have not done so already. After you stop the services, the Data Collector does not try to harvest any data from a Processing Server while being upgraded.

1. Log in to the server as an administrator.

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2. Stop all Tealeaf Services:
   `Start > Programs > Tealeaf Technology > Stop All Services`
   or
   `Start > Programs > Tealeaf Technology > Stop Tealeaf Services`
3. Wait until all services stop.
4. Open the Windows Services applet and manually stop all remaining services whose name begins with `Tealeaf`, including the following.
   - Tealeaf Scheduler Service
   - Tealeaf Transport Service
   - Tealeaf Management Service
5. Close the Windows Services Control Panel.
6. If it is open, close the Windows Event Viewer Control Panel.
7. When these services are stopped, you may continue.

2. Upgrade Report Server

After stopping the services, you can upgrade the Report server.

The Report Server typically includes the Portal.

You may upgrade the MS SQL databases as part of the Report Server upgrade.

• See “Release Upgrade for Reporting Server” on page 27.

Note: If your upgrade process includes a migration to a new SQL Server, see "Migrating Tealeaf Databases" in the *IBM Tealeaf Databases Guide*.

See "Upgrading the Databases" in the *IBM Tealeaf CX Upgrade Manual*.

3. Upgrade Processing Servers

After upgrading the Report server, upgrade the Processing servers in the Tealeaf environment.

See “Upgrade for Processing Server” on page 30.

4. Upgrade Databases

If you did not already as part of your Report Server upgrade, you must upgrade the databases through the Tealeaf Database Manager.

Note: If your upgrade process includes a migration to a new SQL Server, see "Migrating Tealeaf Databases" in the *IBM Tealeaf Databases Guide*.

See "Upgrading the Databases to Release 8.x" in the *IBM Tealeaf CX Upgrade Manual*.

5. Restart Servers

After upgrading the databases, start the Processing servers and the Report server.

Restart Processing Servers

You can restart the TMS subordinate Processing Servers.

1. For each server, you can start all services through the **Windows Start** menu:
   `Start menu > Programs > Tealeaf Technology > Start Tealeaf Services`
2. When the server restarts, check the Event Log for Error-type messages.

Restart the Report Server

After upgrading the databases and restarting the Processing servers,you can restart the Report server.

1. For each server, you can start all services through the **Windows Start** menu:
   `Start menu > Programs > Tealeaf Technology > Start Tealeaf Services`
2. When the server restarts, check the Event Log for Error-type messages.
3. Ignore error messages that state failure to connect to the Canister servers.

6. Upgrade Health-Based Routing Server

If one or more Health-Based Routing Servers is installed, you can upgrade them now.

See "Upgrade for HBR" on page 31.

7. Verify Components

After upgrading the server-side components of Tealeaf, verify that all IBM Tealeaf CX components are working on the appropriate servers.

1. Log on to IBM Tealeaf CX portal. Typically, the URL is the following:
   `http://<Server_Name>/portal`
2. Verify that active sessions are present in the Portal.
3. Verify that sessions can be replayed through the Portal.
4. Verify that all functions of the IBM Tealeaf CX solution work as expected.

Post-Upgrade Cleanup

After completing the upgrade, you can perform the cleanup tasks.

For more information, see Chapter 8, "Post-Upgrade Cleanup," on page 43.

Perform Other Tealeaf Upgrades

After you complete the upgrade of the IBM Tealeaf CX platform and core applications, you can upgrade your other Tealeaf applications and components.

See Chapter 1, "Overview of Upgrade Process," on page 1.

Release Upgrade for Reporting Server

If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact support.

Prerequisites Checklist

Before continuing, verify that you completed the following items:

- Reviewed the overall process. See Chapter 1, “Overview of Upgrade Process,” on page 1.
- Reviewed the changes for Release 8. See Migration to the current release.
- Completed the preparation steps. See Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.
  1. Copied Tealeaf software to each server. For every server that you are upgrading, copy the Tealeaf software to a directory outside of the Tealeaf installation directory.
  2. Backed up the server. Perform a backup of all Tealeaf directories and SQL Server databases on the server before you begin the upgrade of it.
     – Ideally, you should create a complete mirror image of the server.
- Stopped traffic and allowed Data Collector to finish: Immediately before upgrade, you must stop traffic to the Processing Servers in your environment and allow the Data Collector to complete its collection run from the stopped Canisters. See Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.

Note: For more information about issues that may occur during installation or upgrade, see Chapter 4, “Upgrading Tealeaf Software on a Server,” on page 17.

You should also know the process for upgrading an individual server, whether you are upgrading only the current components or changing the configuration. See Chapter 4, “Upgrading Tealeaf Software on a Server,” on page 17.

Change localhost References

Before you upgrade from the release, verify that the server references in the Portal Management page do not use `localhost` values. Instead, use a host name or fully qualified domain name.

Note: This step is important for the Report Server, if it is also the host of any Tealeaf databases. Upon upgrade, some Portal reporting can be corrupted if this change is not made.

See Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.

Database Requirements

As part of the Report Server upgrade, you may choose to upgrade the Tealeaf databases and migrate data from the previous version to the new schema.

More requirements apply to the database upgrades.

- See "Upgrading the Databases" in the *IBM Tealeaf CX Upgrade Manual*.

Upgrade Sequencing

In a multi-server Tealeaf environment, the server that hosts the Reporting Server should be upgraded first.

Note: During the upgrade of the Report Server, you may also choose to upgrade the Tealeaf databases. Tealeaf recommends upgrading them after the server upgrade through the Database Manager. Some additional information about the database upgrade is available on this page. See "Upgrading the Databases" in the *IBM Tealeaf CX Upgrade Manual*.

Before You Begin

As part of the upgrade of the Reporting Server, all Tealeaf databases can be upgraded, as well. Before you begin to upgrade the Reporting Server, review the prerequisites and other requirements for upgrading the database, which includes acquiring the necessary permissions to complete the upgrade.

Upgrading the databases to a new release requires system administrator privileges. See "Upgrading the Databases" in the *IBM Tealeaf CX Upgrade Manual*.

If the upgrade process includes a migration of the SQL databases to a new server, see "Migrating Tealeaf Databases" in the *IBM Tealeaf Databases Guide*.

User Permissions

The user account that is used during the upgrading of the databases requires ADMIN privileges.

During the upgrade steps, the following dialog is displayed.

```
Upgrading the Report/Visitor databases require the current user
to have DB admin privileges.  If this not the case, select NO.
This can be performed later by one with sufficient privileges.
```

See Chapter 7, “Upgrading the databases to the current release,” on page 33.

Upgrading the Reporting Servers

Upgrade the Tealeaf software on the Reporting Server.

Adding as a new component to this server:
If you are adding the Reporting Server to the current machine, you must use the Tealeaf Installer. The component to add is `Report Server and Portal Web Application`.

- See Chapter 4, “Upgrading Tealeaf Software on a Server,” on page 17.

Upgrading an existing Report Server

- Run the Tealeaf Upgrader.
  - See Chapter 4, “Upgrading Tealeaf Software on a Server,” on page 17.
- If you chose to upgrade the database during this process, the Tealeaf Database Manager utility is started. This utility upgrades the MS SQL databases to Release 8.x format. For more information, see Chapter 7, “Upgrading the databases to the current release,” on page 33.
- The report server upgrade is complete.
- If you are prompted to restart and the Tealeaf databases are upgraded, then click **Yes** to the restart machine. Else, click **No**.

Next Steps

If you are performing a multi-server upgrade, you can resume the process with other servers.

- See Chapter 6, “Upgrade for Multi-Server Deployment,” on page 25.

If you did not upgrade the databases as part of the main upgrade process, you must upgrade them after you complete the software upgrades.

- See Chapter 7, “Upgrading the databases to the current release,” on page 33.

Upgrade for Processing Server

You can upgrade each Processing Server in sequence or all in parallel.

Note: If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact http://support.tealeaf.com.

Prerequisite Checklist

Before you begin, verify that you completed the items listed here.

1. Reviewed the overall process. See Chapter 1, “Overview of Upgrade Process,” on page 1.
2. Reviewed the changes for the release. See Migration to the current release.
3. Completed the preparation steps. See Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.
   a. Copied Tealeaf software to each server. For every server that you are upgrading, copy the Tealeaf software to a directory outside of the Tealeaf installation directory.
   b. Backed up the server. Perform a backup of all Tealeaf directories and SQL Server databases on the server before you begin the upgrade of it.
      - Ideally, you should create a complete mirror image of the server.
4. Stopped traffic and allowed Data Collector finish: Immediately before upgrade, you must stop traffic to the Processing Servers in your environment and allow the Data Collector to complete its collection run from the stopped Canisters. See Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.

Note: For more information about issues that may occur during installation or upgrade, see Chapter 4, “Upgrading Tealeaf Software on a Server,” on page 17.

You should also know the process for upgrading an individual server, whether you are upgrading only the current components or changing the configuration. See Chapter 4, “Upgrading Tealeaf Software on a Server,” on page 17.

Stop Traffic to the Processing Server

If you did not do so already, traffic must be stopped to the Processing Server for a period of time first.

See Chapter 5, “Release Upgrade for All-in-One Deployment,” on page 23.

Upgrading the Processing Server

Run the Tealeaf upgrading software. See Chapter 4, “Upgrading Tealeaf Software on a Server,” on page 17.

Next Steps

If you are performing a multi-server upgrade, you can resume the process with other servers.

See Chapter 6, “Upgrade for Multi-Server Deployment,” on page 25.

Upgrade for HBR

This section describes how to upgrade the Health-Based Routing (HBR) server and software.

Note: If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact support.

HBR enables you to balance loads between Processing Servers in a multi-Canister environment.

Note: When you upgrade Tealeaf in a multi-Canister environment, Tealeaf recommends deploying HBR to manage loads during the upgrade process. HBR requires a separate server and more installation before you upgrade. See Health-Based Routing (HBR) Session Agent.

Prerequisite Checklist

Before you begin, verify that you have completed the items listed in the checklist documented here.

1. Reviewed the overall process. See Chapter 1, "Overview of Upgrade Process," on page 1.
2. Reviewed the changes to Tealeaf. See Migration to the current release.
3. Completed the preparation steps. See Chapter 3, "Preparing to Upgrade to the Current Release," on page 7.
   a. Copied Tealeaf software to each server. For every server that you are upgrading, copy the Tealeaf software to a directory outside of the Tealeaf installation directory.
   b. Backed up the server. You should perform a backup of all Tealeaf directories and SQL Server databases on the server before you begin the upgrade of it.
      - Ideally, you should create a complete mirror image of the server.
4. Stopped traffic and allowed Data Collector finish: Immediately before upgrade, you must stop traffic to the Processing Servers in your environment and allow the Data Collector to complete its collection run from the stopped Canisters. See Chapter 3, "Preparing to Upgrade to the Current Release," on page 7.

Note: For more information about issues that may occur during installation or upgrade, see Chapter 4, "Upgrading Tealeaf Software on a Server," on page 17.

You should also know the process for upgrading an individual server, whether you are upgrading only the current components or changing the configuration. See Chapter 4, "Upgrading Tealeaf Software on a Server," on page 17.

Upgrade Sequencing

You can perform the upgrade for each HBR server serially or simultaneously.

Upgrading the HBR Servers

You can upgrade the HBR servers.

Adding as a new component to this server

Note: If you are adding HBR to the current machine, contact Tealeaf http://support.tealeaf.com first.

Upgrading an existing HBR

1. For the HBR server, run the Tealeaf Upgrader `setup.exe` from the directory where you extracted the upgrade archive. See Chapter 4, "Upgrading Tealeaf Software on a Server," on page 17.

   Note: The Tealeaf Upgrader shuts down all Tealeaf software on the server. During the time of HBR upgrade, traffic from the PCA is dropped.
2. Click **Next** on the Welcome Screen.
3. Click **Yes** on the Upgrade Screen.
4. The upgrade proceeds with the following:
   a. Install the Microsoft Redistributes.
   b. Transfer files.
   c. Canister Rebuild Screen (preserving session data). This step takes 5-10 minutes.
   d. Start the upgrade process on other Canisters while you are waiting for this step to complete.
   e. The Finish screen is displayed.
5. Next, you see either:
   a. If prompted to restart the server, click **Yes**.
   b. If prompted to Finish:
      1) Check the option that says **Start Tealeaf Services**.
      2) Click **OK/Done**.

The HBR server starts processing data from the PCA and feeding that data to the Processing Servers or spooling if none is available. Reports are not updated until completion of the Report Server upgrade and resumption of data collection.

After Upgrading HBR

Depending on the sequence of tasks performed for the upgrade, there might be additional things you need to do.

Note:

- If you followed the recommended order of upgrade by upgrading HBR last, then you can ignore this note.
- After you upgraded HBR and rebooted the server, the Tealeaf Management Service automatically restarts. If you did not upgrade other Tealeaf servers yet, this service must be stopped manually. TMS on the upgraded server should not be allowed to communicate with other servers that are not yet upgraded.

Next Steps

If you are performing a multi-server upgrade, you may resume the process with other servers.

See Chapter 6, "Upgrade for Multi-Server Deployment," on page 25.

Chapter 7. Upgrading the databases to the current release

This section describes how to upgrade the Tealeaf databases to the latest version of Tealeaf.

Depending on how databases are deployed in your Tealeaf environment, you may choose to upgrade the databases inline with upgrading its host server or after you complete your upgrade of the Report Server.

Note: If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact http://support.tealeaf.com.

Note: It is possible to upgrade your Tealeaf software and migrate only your event and alert definitions into a new database. See "Upgrading with Event and Alert Migration Only" in the *IBM Tealeaf CX Upgrade Manual*.

SQL Server versions

Make sure you are using a supported version of SQL Server.

See Supported SQL Server Versions for a list of supported SQL Server versions for IBM Tealeaf.

For information about general database server requirements, see the "CX Pre-Installation Checklist" in the *IBM Tealeaf CX Installation Manual*.

Database compatibility mode

When the databases are upgraded to Release 8.x, you may be required to update the SQL Server Compatibility Mode.

SA permissions required

Upgrading the databases to Release 8.1 or later requires System Administrator permissions, as the process creates new filegroups. You cannot upgrade by using the `TLADMIN` account. Verify that the account you are using has the appropriate permissions.

Use of dynamic ports

If your SQL Server installation uses dynamic ports, extra configuration is required before you install or upgrade the Tealeaf databases.

Required temporary space

During the upgrade process, you may choose to migrate event definitions and reporting data. Depending on the options you choose, the Tealeaf Database Manager requires sufficient space to perform the upgrade operations.

- The values in the `Required Temp Space` column indicate the volume of space that is required on the SQL Server machine as a multiple of the size of the database.
- If you are performing multiple operations, they are additive, meaning that the required temp space factors must be added to see the total required temporary space.

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Note: The following are estimates and may not be exact for each Tealeaf solution.

Table 2. Required Temporary Space

Product	Operations	Required Temp Space
No data migration	Install the event definitions	0x
IBM Tealeaf CX	• Install the event definitions • Migrating Report data - Delete during migration • Migrating Report data - Delete after migration	• 0x • 1.25x • 2x
IBM Tealeaf cxReveal	Migrate Search data	1.25x
IBM Tealeaf cxResults	Migrating Visitor data	0x

Preparing the Report Server

Before you begin your upgrade, copy the event definitions to the Report Server and verify user permissions.

Preparing the database server

Follow these instructions to prepare the database server.

Before you begin, run or verify that you have a valid and up-to-date backup of the current Tealeaf databases.

Before you upgrade the databases, verify the following:

- If you are upgrading on a remote server, you must create the filegroup paths on the remote SQL Server before you upgrade.
- If you are not logged in as a user with admin privileges on the database, make the following entries or selections in the Authentication box:
  - Manual Authentication
  - User name: `<SQL Server login>`
  - Password: `<password>`
- The user that installs the databases must have access to a user account that has permissions to create databases on the remote SQL Server. You must be logged in as a trusted user that has admin privileges, or you must have the user name and password for an authorized SQL Server login.

  Note: To upgrade the databases, the database user account must have SA privileges.

Database upgrade steps

Follow the procedures in this section to upgrade your databases.

Disabling the StatsLogger session agent

The database upgrade may hang during the System upgrade step if an active Stats Logger session agent is enabled in the Windows pipeline on the Report Server and is actively writing to the SQL Server database.

Before you begin, consider disabling the Stats Logger session agent on the Report Server.

Creating the cxReveal databases

If you have newly licensed IBM Tealeaf cxReveal or are upgrading from a version of IBM Tealeaf cxReveal that did not include the IBM Tealeaf cxReveal database, you must create the IBM Tealeaf cxReveal database through the Tealeaf Database Manager.

- The IBM Tealeaf cxReveal database was introduced in Release 7.2.12.7296. It requires separate installation and configuration of a dedicated Windows pipeline.
- The IBM Tealeaf cxReveal database requires a separate installation process. See "cxReveal Installation" in the *IBM Tealeaf cxReveal Administration Manual*.

Upgrading the databases

Through the Tealeaf Database Manager, the Tealeaf databases can be upgraded all at one time or individually.For Release 8.x, the databases must be upgraded in a specific order. This order is managed for you in All Databases mode. When you upgrade databases individually, you must complete the upgrade in the order described in this section.

In All Databases mode

Use this procedure to upgrade your databases in All Databases mode.

Note: You should be on the Tealeaf Portal Server.

1. Run the following executable:
   `<Tealeaf_Install_Directory>\Reporting\TeaLeafDatabaseManager.exe`
2. Enter your connection information. See "Tealeaf Database Manager Reference" in the *IBM Tealeaf Databases Guide*.
3. In the menu, select **Mode** > **Database Setup** > **All Databases**.
4. From the Action drop-down, select `Upgrade`.
5. Click **OK**.

   Note: After you begin installation or upgrading in All Database Mode, canceling interrupts the process after the requested action is completed on the current database. The actions on the current database and all previous databases are retained, and any remaining databases are left untouched. You may want to revert to the backup or make adjustments before you complete the action.
6. After the operation completes, review the output window.
   - Be sure to review the Failed Statements pane to verify that all statements were successfully run.

     Note: After completion of an upgrade, the Tealeaf Database Manager attempts to start the SQL Server services on the host machine, in case they stop at some point. If the Database Manager fails to start them on a remote machine, an error message may be generated. If the services are operational, then this message is harmless; a restart of SQL Server is not required during upgrade.

In Single Database mode

Follow these steps in the order shown to manually upgrade your Tealeaf databases.

The databases must be ugraded in the following order.

1. The System database must be upgraded first.
2. The Reports database must be upgraded second.

   Note: If you install or update the System database, you must install or reinstall the event definitions through the Tealeaf Database Manager at some later point in the installation process. See "Installing Tealeaf Databases" in the *IBM Tealeaf Databases Guide*.
3. The other databases can then be created and updated in any order.

Perform the following steps on the Tealeaf Portal Server.

1. Run the following executable: `<Tealeaf_Install_Directory>\Reporting\TeaLeafDatabaseManager.exe`
2. Enter your connection information. See "Tealeaf Database Manager Reference" in the *IBM Tealeaf Databases Guide*.
3. Upgrade the System database:

   Note: The System database must always be created first.
   a. In the menu, select **Mode** > **Database Setup** > **Single Database**.
   b. From the Database drop-down, select `System`.
   c. From the Action drop-down, select `Upgrade`.
   d. Click **OK**.
   e. After the operation completes, review the output window.
      - Be sure to review the Failed Statements pane to verify that all statements were successfully run.

        Note: If you install or update the System database, you must install or reinstall the event definitions through the Tealeaf Database Manager at some later point in the installation process.
   f. Close the output window.
4. Upgrade the Reports database:
   a. In the menu, select **Mode** > **Database Setup** > **Single Database**.
   b. From the Database drop-down, select `Reports`.
   c. From the Action drop-down, select `Upgrade`.
   d. Click **OK**.
   e. After the operation completes, review the output window.
      - Be sure to review the Failed Statements pane to verify that all statements were successfully run.
   f. Close the output window.
5. Upgrade the RS Extractor database:
   a. In the menu, select **Mode** > **Database Setup** > **Single Database**.
   b. From the Database drop-down, select `RS Extractor`.
   c. From the Action drop-down, select `Upgrade`.
   d. Click **OK**.
   e. After the operation completes, review the output window.

- Be sure to review the Failed Statements pane to verify that all statements were successfully run.

f. Close the output window.

6. Upgrade the Statistics database:
   a. In the menu, select **Mode** > **Database Setup** > **Single Database**.
   b. From the Database drop-down, select `Statistics`.
   c. From the Action drop-down, select `Upgrade`.
   d. Click **OK**.
   e. After the operation completes, review the output window.
      - Be sure to review the Failed Statements pane to verify that all statements were successfully run.
   f. Close the output window.
7. Upgrade the IBM Tealeaf cxReveal database:

   Note: The IBM Tealeaf cxReveal database requires special setup.
   a. In the menu, select **Mode** > **Database Setup** > **Single Database**.
   b. From the Database drop-down, select `Search`.
   c. From the Action drop-down, select `Upgrade`.
   d. Click **OK**.
   e. Close the output window.
8. In single database mode, after you complete the upgrade, you must install the event definitions.

Troubleshooting

Topics in this section describe steps you can take to resolve common problems you might encounter when upgrading your database.

Upgrading when the database server times out during upgrade of `rs_activity_log` table

Use this procedure when you encounter a timout error during a database upgrade.

During the upgrade of the `rs_activity_log` table in the `TL_SYSTEM` database, you may receive a timeout error similar to the following:

```
4/8/2010 9:04:40 AM    TL_SYSTEM     ERROR    There was an error executing
   the command list.
Timeout expired.  The timeout period elapsed prior to completion of
   the operation or the server is not responding.
At statement: --Move all the 'DocumentsFound' attribute values into the
   new REPORT_VALUE column to make them reportable/chartable in the Portal
```

This database table contains the user activity logs from the Portal. In pre-Release 7.2 versions, there was a known issue in which this database table was not properly trimmed. As a result, the table can grow large. Depending on the size of the SQL Server timeout setting, the timeout may occur during the upgrading of this table.

You may want to review the `rs_activity_log` table to identify if the data should be preserved or not.

To fix this issue:

1. Back up the contents of the rs_activity_log, if you want to preserve it for auditing purposes.
2. You can do either of the following:
   a. Increase the SQL Server timeout setting for the Tealeaf databases.
   b. Clear the rs_activity_log database.

Increasing the SQL Server timeout

Complete the following steps to increase the SQL Server timeout setting that is used by Tealeaf and complete the upgrade.

1. Log in to the Tealeaf Portal as an administrator.
2. From the **Portal** menu, select **Tealeaf** > **TMS**.
3. The Tealeaf Management System is displayed. See "Tealeaf Management System" in the *IBM Tealeaf cxImpact Administration Manual*.
4. In Server view, click the **Tealeaf** node.
5. Select **Shared configuration information**.
6. In the Config Actions pane, click **View/Edit**.
7. The Tealeaf Report Configuration dialog is displayed. Click the **Database** tab.
8. Click Connection Timeout.
   - By default, this value is set to 600 (seconds), which is 10 minutes.
9. Enter a higher value and click **Apply**.
10. Click **Save**.
11. In the Update Servers dialog, select **Add Tasks and Submit**.
12. After the job runs, all Tealeaf servers in your environment are updated with the new database connection timeout setting.
    - See "TMS Jobs Tab" in the *IBM Tealeaf cxImpact Administration Manual*.
    - For more information about the database connection timeout, see "Shared configuration information" in the *IBM Tealeaf cxImpact Administration Manual*.
13. Upgrade the TL_SYSTEM database in Individual Database mode through the Tealeaf Database Manager.

Clearing the rs_activity_log table

To clear the contents of the rs_activity_log table and complete the upgrade, complete the following steps.

1. Log in to SQL Management Studio.
2. To clear the table, run the following SQL:

   Note: This statement removes the contents of the rs_activity_log table. Verify that you have a backup.

   ```
   use tl_system;
   TRUNCATE TABLE RS_ACTIVITY_LOG;
   ```

3. Upgrade the TL_SYSTEM database in Individual Database mode through the Tealeaf Database Manager.

TLEventManager Utility

Note: Tealeaf events are installed as part of the initial deployment or upgrade of your Tealeaf system. During normal operations, you should never need to use this utility. It is provided for use during resolution of issues with Tealeaf http://support.tealeaf.com.

`TLEventManager.exe` is an external utility that can be used to install or update the event definitions in use by your Tealeaf system to all active Tealeaf Canisters.

- This utility is available to customers in release 8.3.1.8372 and later.

Prerequisites

- The Portal application must be made aware of each Canister in the environment. Verify that there is a reference to each Canister in the Portal Management page.
  - See "Managing Tealeaf Servers" in the *IBM Tealeaf cxImpact Administration Manual*.
- If you are loading only the default Tealeaf events, no additional files are required.
- If you load or import an event XML file, TLE, or convert 7.2 CSVs, these files must be placed in the `TeaLeaf\System` directory on the same machine as `TLEventManager.exe`

Backup

Before you make changes to a Tealeaf system that already contains event definitions, perform a backup of the existing definitions. Through the Tealeaf Event Manager, you can export a version of the event definitions that can be reimported as needed.

- See "TEM Import-Export Tabs" in the *IBM Tealeaf Event Manager Manual*.

Location

The command-line utility is available here:

```
<Tealeaf_install_directory>\Reporting\TLEventManager.exe
```

When to Use

For customers, the primary use of this utility is to apply patches to the Tealeaf event definitions installed on your system.

For implementation engineers, this utility can be used for a one-time migration of event definitions between a previous installation and the current installation. The most common use case is when the customer wants a fresh Tealeaf system with no pre-existing data, other than their event definitions.

Loading the default event definitions

If your database installation did not run `TLEventManager` or you must reload the system's default event definitions, follow the steps.

1. Log in to the Report Server as an administrator.
2. Navigate to the following directory:
   ```
   <Tealeaf_install_directory>\Reporting
   ```
3. Execute the following command at the command line:
   ```
   TLEventManager.exe -bootstrap
   ```
4. If the events are successfully loaded, the following message is displayed:
   ```
   Event Manager Utility completed with return code: 0 (OK)
   ```

Return codes

Below you can review the possible return codes are their meaning.

Note: If you receive a non-zero return code when you load event definitions from the command line after a fresh installation, retrieve the log file for the utility from the `Logs` directory and contact Tealeaf http://support.tealeaf.com.

Table 3. Return codes

Return Code	Description
0	No Errors
1	Invalid command arguments
2	Unable to connect to the Data Device
3	Data Service started with error
4	License file not valid
5	Unable to load internal event resources
6	Unable to load event definitions from the Data Service
7	Error saving events
8	Error saving reports
9	Invalid namespace
10	Unable to connect to Search Server
11	Error saving legacy event definitions
12	A required Dimension Group was not found
13	Error loading 7.2 event CSVs
14	Error importing/converting events
15	Error converting Custom Charts
16	Error converting Dashboards
17	Error converting Scorecards
18	Error converting Schedules
19	Error saving legacy dimension values
20	Error loading deleted events list from the Data Service
21	Error generating event XML

Upgrading

During an upgrade, the utility is automatically called by the Tealeaf Database Manager.

Note: Running the `TLEventManager.exe` utility on the same set of definitions for the same version of the software is harmless.

Database Install or Upgrade

If you installed or upgraded one or more Tealeaf databases, rerun the utility as a precaution.

Loading/importing events via TLEventManager: You can use TLEventManager to import and export of Tealeaf events in XML and TLE format. Sample execution scenarios are listed below:

Note: Depending on the number of events that are imported and the dependencies of those events, import may be a time-intensive process.

Loads the default Tealeaf events

```
TLEventManager.exe -bootstrap
```

Imports event definitions for an Event XML

```
TLEventManager.exe -importxml events.xml
```

Imports event definitions from an Event TLE

```
TLEventManager.exe -importtle events.tle
```

`events.xml` and `events.tle` above can be replaced with any file names of your choosing.

Note: File names cannot contain spaces. Specified XML and TLE files must exist in the `TeaLeaf\System` directory on the local computer where TLEventManager is being executed.

Convert and import events from 7.2 CSVs from TeaLeaf\System

```
TLEventManager.exe -convert
```

Note: Event IDs are properly maintained only if `TLEventManager.exe` has never previously been executed against this database installation. If this utility has been previously executed, the 7.2 CSVs are converted and imported, but IDs are not maintained.

Limitations

- Event icons are not currently imported
- 7.2 Event IDs are only preserved if the `-convert` command switch is specified on the first execution, which is typically handled automatically by the normal upgrade process.

Execution: During execution, `TLEventManager.exe` launches the Tealeaf Data Service, which connects to a variety of Tealeaf systems. However, the utility only needs the Data Service to insert the event definitions into the database. Other Tealeaf components do not need to be available during execution of the utility.

Order of execution for events

TLEventManager has a fixed order of executing steps. Whether the following steps are executed depends upon the command-line arguments:

- Bootstrap events
- Converted events
- XML events
- TLE events

The XML or TLE events can override bootstrap and converted events. Each subsequent event type can potentially override the preceding in the same operation.

Arguments: The following arguments are available at the command line.

Argument	Description
-ss	Search Server host
-ssport	Search Server port
-ds	Data Service host

-dsport
Data Service port

-bootstrap
Load base objects only

-convert
Convert legacy events

-fullenumconvert
Convert enum lists with ref value support. See Importing enumerated events.

-importtle <tle>
Import Event TLE from `TeaLeaf\System`

-importxml <xml>
Import Event XML from `TeaLeaf\System`

-outfile <file>
Writes program exit status to file

-dimgroups <group1,group2>
Dimension groups for conversion

Log file Location: `TLEventManager.exe` generates and maintains a robust log file in the following location:

```
<Tealeaf_install_directory>\Logs\TLEventManager_YYYYMMDD.log
```

where:

- `YYYYMMDD` is the date stamp for the log file. Log files are rolled every night at midnight.

Note: If you encounter issues while you use the Tealeaf Event Manager utility, acquire the log file for the date in question before contacting Tealeaf http://support.tealeaf.com.

Conversion report

For more information about the Conversion report, see Chapter 8, "Post-Upgrade Cleanup," on page 43.

Data Service Log Messages

If the Tealeaf system is offline, errors may be generated in the Tealeaf Data Service log indicating that the service was unable to connect to other Tealeaf components. For example, the following error message indicates that the Data Service could not connect to Search Server.

```
2010-03-24T16:53:58    SsConnector.PrimeServer     ERROR
TEALEAF.EXAMPLE.COM:19000 Server.Initialize returned null.
Error: Initialize error for TEALEAF:19000 - Cannot connect to
a search server! (Web Exception), AttemptCount=0 : Unable to
connect to the remote server
```

Chapter 8. Post-Upgrade Cleanup

After you complete the upgrade, you should complete the following tasks, if you did not do so already.

Note: If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact support.

Updating the Tealeaf Application Pool settings

Complete the steps listed here to update the Tealeaf Application Pool settings in Microsoft Internet Information Services (IIS).

1. From the server that is running the Tealeaf Portal, log in to the Windows server.
2. Open IIS Manager. For more information on how to open IIS Manager, see the documentation for your Windows server.
3. Locate the Tealeaf Portal server node, then click **Application Pools**.
4. Change the setting for *.NET Framework Version* to a support version. You can review the installation requirements for the release in the *Installation Guide*.
5. Restart the IIS service before you log in to the Tealeaf Portal.

Review Print Out of Preparing Page

If you printed and annotated the Preparing to Upgrade page, you may want to review the print out to identify the items that may require follow up after upgrade.

Some of these items may be reflected in the following tasks in this section.

See Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.

Apply Any Patches

From time to time, Tealeaf may publish patches to official builds to address specific issues.

Before you verify your installation, see whether there are any patches for the build to which you have upgraded. For more information on downloading IBM Tealeaf, see IBM Passport Advantage Online.

Review Conversion report

After the upgrade completes, review the Conversion Report, which identifies the status of conversion.

See Event Conversion Report.

Review Logs

Review the following logs for error messages.

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TLEventManager log

Errors that are related to the conversion of events and installation of new event definitions is stored in the following location:

`<Tealeaf_install_directory>\Logs\TLEventManager-yyyyMMdd.log`

TealeafDatabaseManager log

This log contains messages on the database upgrade and data migration processes. It is stored in the following location:

`<Tealeaf_install_directory>\Logs\TeaLeafDatabaseManagerYYYYMMDD_*.log`

Event Viewer

Check the Windows Event Viewer for Application errors.

1. Open the Event Viewer through the **Windows Start** menu.
2. Click the **Application** node.
3. Sort the results by the Source column.
4. Review the entries for the `Tealeaf` entry.
5. Review warning and error messages.

Set Recovery Model to Simple

Tealeaf recommends setting the Recovery Model for all Tealeaf databases to `Simple`.

Re-Apply Portal Custom Configurations

The following files enable you to specify configurations specific to your instance of the Portal web application.

During the upgrade process, these files are automatically backed up in the same directory where they are located:

```
<Tealeaf_install_directory>\Portal\WebApp\custom_content.htm
<Tealeaf_install_directory>\Portal\WebApp\Web.Config
<Tealeaf_install_directory>\Portal\WebService\Web.Config
```

After the upgrade is complete, review these files and apply and changes made specific to your pre-upgrade Tealeaf solution to the default files installed during the upgrade process.

Replay server post-upgrade cleanup tasks

There are several post-upgrade cleanup tasks to do on the Replay server.

Disable Interactive Services Detection

For the WebKit/Chrome renderer to function properly, the Interactive Services Detection service on the server that hosts Replay Server must be disabled.

See "CX Pre-Installation Checklist" in the *IBM Tealeaf CX Installation Manual*.

Replay Server must run as Local System

The Replay Server must be run as the Local System user.

Before you begin replaying sessions through BBR, complete the following steps for each Replay Server.

Note: These steps must be applied to each Replay Server in your environment.

1. Log in to the server that hosts the Replay Server.
2. From the **Start** menu, open the Services control panel.
3. From the list of services, select **Tealeaf Replay Server**.
4. Right-click the service and select **Properties**.
5. Click the **Logon** tab.
6. Click the `Local System account` radio button.
7. Select the `Allow service to interact with desktop` option.
8. Click **OK**.
9. Right-click the service and select **Restart**.
10. Repeat the steps for any other Replay Servers in your Tealeaf environment.

Replay Server Access to Origin Server

The Tealeaf Replay Server requires access to the server that hosts the web application for effective replay.

See "Configuring the Replay Server" in the *IBM Tealeaf CX Configuration Manual*.

Updating POST Data Matching Configuration to Recognize New Content Types

If you upgraded to the current release and use the DWR library, you must update the Replay Server profile and each RTV replay profile to recognize the DWR requests and to apply the appropriate POST data matching plug-in to locate the corresponding response.

- See "Configuring the Replay Server" in the *IBM Tealeaf CX Configuration Manual*.
- Individual users of RTV must apply this change to their local replay profiles. See "RealiTea Viewer Overview" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Start All Tealeaf Services

If you did no do so already, start all Tealeaf services on all upgraded servers.

Configure Permissions

Note: If your upgrade includes any newly licensed Tealeaf products, automatic access to product features is granted to the `ADMIN` group if you did not modify your `ADMIN` group permissions since original installation.

- If you modified the `ADMIN` group, you must update menu permissions manually for that group.
- For all other users and groups, you must configure the appropriate permissions.
- See "CX User Administration" in the *IBM Tealeaf cxImpact Administration Manual*.

Event Model Backup

Before you begin making modifications to your event definitions, you may want to perform an event model backup, which can be used to restore event definitions to a previous state.

- See "Event Model Backup and Restore" in the *IBM Tealeaf cxImpact Administration Manual*.

Verify Tealeaf Operations

After you upgraded all Tealeaf servers with the appropriate software, you can use the following steps to verify basic Tealeaf operations through the Tealeaf Portal.

1. Log in to the Portal as a regular Tealeaf user.

   Note: When you log in to the Portal, you might notice that a message at the top of the window indicates that there is a delay in processing reporting data. During the period when the upgrade was completed, hits were received and were spooled until they were processed. In time, this message disappears. See "Portal State Messages" in the *IBM Tealeaf cxImpact User Manual*.

   - Check various pages in the Portal to see that data is being properly received and displayed.
2. Log in to the Portal as an Administrator.
   - Check that data is being properly received and displayed in the selections available in the Tealeaf menu.
   - Perform the same Portal tests that you executed on the solution before the upgrade. See Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.
3. Launch the IBM Tealeaf CX RealiTea Viewer, if it is used in your Tealeaf solution.
   - Verify that you can see, search for, and replay Tealeaf sessions.

Check for Active Sessions

If all Tealeaf services successfully restarted, you can verify capture of session data through the Portal.

1. In the **Portal** menu, select **Active** > **Sessions**.
2. Verify that a non-zero number of sessions is displayed.
   - See "Monitoring Active Sessions" in the *IBM Tealeaf cxImpact User Manual*.
3. If no sessions are displayed, you can verify the state of your Windows pipelines. From the **Portal** menu, select **Tealeaf** > **TMS**.
4. The Tealeaf Management System is displayed. See "Tealeaf Management System" in the *IBM Tealeaf cxImpact Administration Manual*.
5. Click the **Pipeline Status** tab.
6. You can verify that non-zero numbers of hits are being processed by your operational pipelines.
   - See "TMS Pipeline Status Tab" in the *IBM Tealeaf cxImpact Administration Manual*.
7. If no hits are entering the pipeline, there may be an issue in the IBM Tealeaf CX Passive Capture Application.
   - The PCA may not capture enabled. See "PCA Web Console - Console Tab" in the *IBM Tealeaf Passive Capture Application Manual*.
   - The PCA may not be configured to deliver hits to the appropriate Transport Service. See "PCA Web Console - Delivery Tab" in the *IBM Tealeaf Passive Capture Application Manual*.

Verify Events

Verify that events are being properly displayed in the Portal.

1. From the **Portal** menu, select **Active** > **Events**.
2. If no events are displayed, click the `Include Zeroes` checkbox.

3. Verify that there are active events in the displayed. The event counts might not be relevant.
4. If no events are displayed, you may need to reinstall the event definitions.
   - See "Installing Tealeaf Databases" in the *IBM Tealeaf Databases Guide*.

Events That Fail to Convert

In the Conversion Report, some events are labeled to require extra attention. These events must be reviewed and modified through the Tealeaf Event Manager.

1. Log in to the Tealeaf Portal as an administrator.
2. Select **Configure** > **Event Manager**. The Tealeaf Event Manager is displayed.
   - See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.
3. You can review the events that require attention. Click the **Events** tab.
4. Click the `Needs Attention` event label. The list of events that require attention is displayed. This list includes events that converted with Failed or Needs Attention status.
5. Edit each object to repair it.
   - To prevent these events from firing when they are not working, the upgrade process may disable the event and insert the following condition:

     ```
     Session GUID == ""
     ```

     The event condition never evaluates to `true`. After you fix the problem that is identified in the Conversion Report for the event, you must remove the condition from the event for it to properly function.
     Other events that require your review may not have this condition.
   - For more information, see "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.
6. After you edit each object, click **Save Draft**.
7. After you complete editing the events, click **Save Changes**. Your changes are saved to the server and immediately applied to the capture stream.
   - See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.

Events with malformed regular expressions: If any Release 7.2 event definitions contained regular expressions, the regular expressions were validated during the event migration process. If validation failed, then the regular expressions are commented out, and the event cannot fire in the upgraded environment. These events should be reviewed.

Verify Event Activity

1. From the **Portal** menu, select **Analyze** > **Event Activity**.
2. Compare the listed values to the Event Activity report that you exported before the upgrade.

Verify Scorecards

If you licensed IBM Tealeaf cxView in your pre-upgrade solution, verify that scorecard data is properly migrated.

Note: At the top of the next hour after the upgrade is complete, scorecards are automatically recalculated. Wait until after the first successful top-of-the-hour Data Collector run occurs before you check the scorecard data.

- In some cases, scorecard data is not successfully recalculated. If the data is not present after the Data Collector run, then troubleshooting steps are provided to address this issue. See "Scorecard Aggregation Dates" in the *IBM Tealeaf cxView User Manual*.

Verify Exported Dashboards

1. From the **Dashboards** menu, select one of the Dashboards that you exported from your pre-upgrade system.

   Note: Do not use the Deprecated - Technical Site Metrics dashboard for comparison. It is included if you customized that dashboard and need to migrate those customizations to Release 8.1 or later, which includes a different version of the dashboard (Technical Site Metrics).
2. Compare the data in the selected dashboard to the dashboard version that you exported before the upgrade.
   - See "Using Dashboards" in the *IBM Tealeaf cxView User Manual*.
3. Repeat the steps for any other dashboards you may have exported.

Verify Search Templates

As part of the upgrade process, the Canister and Search Server identifiers are rebuilt in the database. After the upgrade is complete, verify that the default search servers identified in your search templates are valid. In the template properties, verify that the Search Server property is properly specified.

- See "Configuring Search Templates" in the *IBM Tealeaf cxImpact Administration Manual*.

Reconfigure cxReveal Search Templates

The IBM Tealeaf cxReveal Search database enables the capture of session attributes and storage of them in the Search database for immediate search access.

Note: If you are upgrading to the current release and you configured IBM Tealeaf cxReveal search templates to access the search database, these search templates need to be reconfigured after upgrade, as the method of populating them changed.

During the upgrade process, IBM Tealeaf cxReveal search templates might have some search fields that are removed from them. If you captured screen capture as recommended of your IBM Tealeaf cxReveal search template fields before upgrade, you may now re-create these fields in the upgraded IBM Tealeaf cxReveal search templates.

Note: You should load each IBM Tealeaf cxReveal search template field and save it again, which may prevent issues in the Search page.

Note: You should also verify that all upgraded search templates are still of the same type: IBM Tealeaf cxImpact or IBM Tealeaf cxReveal.

- See "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.
- See "Configuring Search Templates" in the *IBM Tealeaf cxImpact Administration Manual*.
- For more information about the pre-upgrade steps, see Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.

Reconfigure LoginID and other attribute search fields

During the upgrade process, the LoginID and UserDef1-4 attributes are converted to LoginID and SessionAttributes1-4 in the new system.

Note: You should also verify that all upgraded search templates are still of the same type: IBM Tealeaf cxImpact or IBM Tealeaf cxReveal.

- For more information about how these are mapped in the new system, see Chapter 3, “Preparing to Upgrade to the Current Release,” on page 7.

Now you can reconfigure your IBM Tealeaf cxImpact search templates that reference any of the above Release 7.2 attributes to work with the current release.

- For more information about verifying the conversion, see Review First Five Session Attributes Mappings.
- LoginID requires additional configuration before it is working properly in the upgraded system. See "E2E Scenario - Configure Login ID to be Searchable" in the *IBM Tealeaf cxImpact User Manual*.

See "Configuring Search Templates" in the *IBM Tealeaf cxImpact Administration Manual*.

Search for Completed Sessions

In the Portal, verify that completed sessions migrated.

1. In the **Portal** menu, select **Search** > **Completed Sessions**.
2. Specify a search that should return a positive number of sessions.
3. Execute the search and verify that sessions are returned.
4. Check the Events column to verify that events are recorded for the sessions.
   - See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Check Database Filegroup Size Report

In the Portal, select **Tealeaf** > **System Status** > **Database Filegroup Size**.

Note: If the Database Filegroup Size report contains no data and you upgraded from Release 7.2, contact Tealeaf support for a SQL patch.

Remove Tealeaf Upgrader Files from Servers

If you successfully verified operations of the above features, you can remove the Tealeaf Upgrader and installation files from each server in your environment now.

Upgrading Other Tealeaf Components

After you complete the steps and verify that Tealeaf is operating, review and perform the following upgrades.

Upgrade RTV

The IBM Tealeaf CX RealiTea Viewer (RTV) stand-alone application enables Tealeaf users to replay sessions from the Windows desktop.

- IBM Tealeaf CX RealiTea Viewer installations on Tealeaf servers are automatically upgraded when the other Tealeaf software is upgraded on the system.

Note: All RTV users should upgrade their desktop installations to the RTV version provided with the upgrade distribution. Old versions of RTV cannot evaluate Release 8.x event data. Release 8.x versions of RTV can search for and read in Release 7.x sessions. This upgrade process should be coordinated to occur near the core upgrade.

The IBM Tealeaf CX RealiTea Viewer requires a separate installation and upgrade for each desktop on which it is installed in your environment.

Note: As part of your upgrade, you may be required to apply changes to the Tealeaf.js stub file used by RTV.

Note: It is important to upgrade the `Tealeaf.js` file, see "RealiTea Viewer Overview" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Recommended PCA Upgrade

Note: Avoid upgrading the PCA and the IBM Tealeaf CX platform at the same time. Upgrading asynchronously may help in resolving any issues that occur during the upgrade process.

In most deployments, the IBM Tealeaf CX Passive Capture Application can be upgraded independently of the Windows-based components of IBM Tealeaf CX. Tealeaf recommends that you upgrade the PCA after you perform the core upgrade.

Note: Tealeaf recommends upgrading the PCA to the latest version when possible. If issues are encountered after you upgrade the IBM Tealeaf CX platform and core applications, an upgrade of the IBM Tealeaf CX Passive Capture Application may rectify the issue.

Note: If your web application uses binary posts or non-standard data, you must upgrade your PCA to build 3326 or later to enable the configuration of non-standard capture types.

For more information about configuring new capture types, see "PCA Web Console - Pipeline Tab" in the *IBM Tealeaf Passive Capture Application Manual*.
For more information about upgrading the PCA, see Chapter 9, “Upgrade for CX PCA,” on page 53.

Upgrade to Latest Version of UI Capture

Note: Avoid upgrading UI Capture and IBM Tealeaf CX components at the same time. Asynchronously upgrades may help in debugging issues if they arise. Tealeaf recommends upgrading UI Capture after you complete all upgrades of your other Tealeaf products.

Tealeaf UI Capture is a component of the IBM Tealeaf CX license. When deployed with your web application, UI Capture enables the capture and processing of user interface events that occur on the client browser, enabling high fidelity replay and additional reports on client-side metrics.

- See "UI Capture FAQ" in the *IBM Tealeaf UI Capture for AJAX FAQ*.

  Note: If you deployed the IBM Tealeaf CX UI Capture for AJAX library to your web application, it is recommended that you upgrade to the latest version as

part of your overall upgrade to Tealeaf Release 8. Depending on how UI Capture is implemented and deployed with your web application, this process may require significant lead time to complete.

Note: You must upgrade IBM Tealeaf CX UI Capture for AJAX to build 2011.03.15.1 or later if you licensed IBM Tealeaf CX Mobile to replay mobile sessions in Release 8.1 or later.

- See "UI Capture for Ajax Installation and Implementation" in the *IBM Tealeaf UI Capture for AJAX Guide*.

Upgrading Other Tealeaf Applications

Upgrading cxReveal database

IBM Tealeaf cxReveal now includes a separate database and Windows pipeline to enable search for sessions based on session attributes.

When you upgrade IBM Tealeaf cxImpact, IBM Tealeaf cxReveal can be upgraded at the same time.

Note: To enable the IBM Tealeaf cxReveal database and Windows pipeline, separate installation and configuration is required after you have upgraded IBM Tealeaf cxImpact. See "cxReveal Installation" in the *IBM Tealeaf cxReveal Administration Manual*.

Upgrading the Tealeaf Cookie Injector

See "Installing and Configuring the Tealeaf Cookie Injector" in the *IBM Tealeaf Cookie Injector Manual*.

Archive

Transfer all backups that you made before the upgrade to a safe and permanent location.

Send message

If you are notifying Tealeaf users that the upgrade is complete, mention the following:

Note: The IBM Tealeaf CX system is upgraded. Before you begin to use Tealeaf, clear your browser's cache, as files in your cache might change on the server during the upgrade. For more information about clearing the cache, see your browser's documentation.

Upgrade Troubleshooting

Problem: No events displayed in the Tealeaf Portal

If no events are appearing in the Tealeaf Portal and you had active events in your pre-upgrade Portal, you may need to reload the event definitions through the Tealeaf Database Manager.

- See "Installing Tealeaf Databases" in the *IBM Tealeaf Databases Guide*.

Location

This report is stored in the following location:

`<Tealeaf_install_directory>\Logs\TLEventManager-Report_yyyyMMdd_HHmmss.html`

Color Codes

The report provides conversion status information by using color-coded indicators.

Table 4. Color Codes

Color	Level	Notes
green	Success	No action is required
orange	Needs Attention	Converted object may require extra configuration to work properly in Release 8. • Items marked Needs Attention may include a red-lined item that indicates what requires attention.
red	Failed	Object was not converted properly and does not exist in the upgraded environment. Item may be deprecated in the new release or superseded by a new object or may fail to upgrade, requiring Customer Support.

Note: Events that failed to convert to the new format are modified so that they are easily identified yet do not ever fire until they are fixed. See Chapter 8, "Post-Upgrade Cleanup," on page 43.

Chapter 9. Upgrade for CX PCA

It is recommended that you always use the latest version of the IBM Tealeaf CX Passive Capture Application suitable for your version of IBM Tealeaf CX. For more information on downloading IBM Tealeaf, see IBM Passport Advantage Online.

Note: If you have any questions about the process or the steps that are required to upgrade your Tealeaf solution, contact support.

Note: Avoid upgrading the CX PCA and the Windows components at the same time. Upgrading asynchronously may help in resolving any issues that occur during the upgrade process.

The IBM Tealeaf CX Passive Capture Application is installed on a separate Linux server from the Windows components and can be upgraded independently of the rest of the IBM Tealeaf CX upgrade. However, for purposes of upgrading the entire IBM Tealeaf CX installation, Tealeaf recommends that you upgrade your CX PCA to the latest version after you upgrade the other Windows components.

- This process works for a multi-instance CX PCA.
- If the environment is using multiple CX PCA servers, the process must be repeated for each server.

Note: Before you begin, review the Limitations on Upgrade Path.

Verify Requirements

System Requirements

Note: Before you begin upgrading the IBM Tealeaf CX Passive Capture Application, verify that you have the correct packages installed. See "Installation" in the *IBM Tealeaf Passive Capture Application Manual*.

Note: If your PCA is set to decrypt SSL traffic, verify that your existing SSL keys are compatible with the version of PCA that you are installing. If you are using the wrong keys, then the PCA cannot decrypt SSL traffic and data is not available in Tealeaf. See "Installation" in the *IBM Tealeaf Passive Capture Application Manual*.

Data Requirements

The IBM Tealeaf CX Passive Capture Application requires hi-fidelity traffic of all requests and responses that are communicated between your web application and visitors to it. Before you upgrade, you should verify that your network environment supports PCA data requirements.

- See "Tealeaf PCA Network Capture Traffic Requirements" in the *IBM Tealeaf Passive Capture Application Manual*.

RPM of Installed Version

Before you begin, you should verify that you retained a version of the RPM file that is used to install your current version of the PCA. If the PCA fails to install and you are unable to rectify the problem, you may use RPM to revert to the old version of the PCA its RPM file.

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See “Reverting Your PCA Upgrade” on page 55.

For more information on downloading IBM Tealeaf, see IBM Passport Advantage Online.

Data Capture

Note: Unless the PCA is using failover, Tealeaf does not capture hits at all during the period between the Tealeaf stop and Tealeaf start commands. Typically, this process lasts between 5-10 minutes. Tealeaf recommends scheduling the upgrade during off-peak hours.

Depending on your version of the PCA, Failover may or may not be supported. See "PCA Web Console - Failover Tab" in the *IBM Tealeaf Passive Capture Application Manual*.

Upgrade Passive Capture

Note: The upgrade process for the IBM Tealeaf CX Passive Capture Application is consistent across all versions of Linux.

1. Log on to the IBM Tealeaf CX Passive Capture Application server as `root`.
2. Stop Tealeaf services:
   ```
   tealeaf stop
   ```
3. Navigate to the `/root` directory, where the `.rpm` file is stored:
   ```
   cd /root
   ```
4. Upgrade the Tealeaf Capture software by using the following command:
   ```
   rpm -Uvh <tealeaf rpm>
   ```
   - Example RPM from PCA 3330: `tealeaf-pca-3330-1.RHEL3.i386.rpm`
5. Verify that process completes without errors.
6. Start Tealeaf services:
   ```
   tealeaf start
   ```

Verify Passive Capture

1. Log on to the IBM Tealeaf CX Passive Capture Application (PCA) web user interface.
   - See "Passive Capture Configuration via Web Console" in the *IBM Tealeaf Passive Capture Application Manual*.
2. In the Summary tab, verify that traffic is being captured and is flowing from the IBM Tealeaf CX Passive Capture Application server to the appropriate downstream server.
   - Traffic to stopped servers is spooled.
   - To refresh the display, click **Refresh** at the top of the screen.
3. If the traffic is not flowing, select the **Console** tab. Verify that Capture is on.
   - See "Troubleshooting - Capture" in the *IBM Tealeaf Troubleshooting Guide*.

Verify Windows Pipeline Processing

If your Windows pipeline is enabled and the Portal is available, you can verify that data is being processed through it.

1. Log in to the Portal as an administrator.
2. From the **Portal** menu, select **Tealeaf** > **TMS**. The Tealeaf Management System is displayed.

   See "Tealeaf Management System" in the *IBM Tealeaf cxImpact Administration Manual*.
3. Click the **Pipeline Status** tab.
4. Select the pipeline that performs the processing of captured data.
5. Verify that hits are flowing through each session agent in the pipeline. For more information, see "TMS Pipeline Status Tab" in the *IBM Tealeaf cxImpact Administration Manual*.

For Multiple PCA Servers

Repeat the above processes for each PCA server.

Reverting Your PCA Upgrade

If your PCA upgrade failed for some reason and you must revert to the previous installation to resume capturing traffic, you can revert to your previous build.

- See in the "Installation" in the *IBM Tealeaf Passive Capture Application Manual* .

Chapter 10. Testing Your Tealeaf Solution

After you complete installation and the initial configuration tasks for each licensed Tealeaf product and module, verify the operations of your Tealeaf solution. This section provides a simple procedure for testing end-to-end operations of the Tealeaf solution, with modifications based on optional components that you may have installed.

Methodology

This testing procedure requires the generation of a test session on the web application and the capture of the session through Tealeaf and locally through the Tealeaf Client-Side Capture utility.

As you browse through the session, you can test, search, replay, and report capabilities for active sessions and then perform similar tests when the session completes.

- In an active session, hits are currently being added to the session stored in the in-memory Short Term Canister, or the session is not yet closed or timed out.
- A completed session is a closed session that moved from the Short Term Canister to the Long Term Canister for indexing and storage. Sessions that archived out of the LTC are also considered to be completed sessions.

The methodology tests the following fundamental features of the Tealeaf solution by locating your captured session data in various parts of the capture, processing, and reporting areas of the Tealeaf solution.

Features

- Capture: Session capture by the IBM Tealeaf CX Passive Capture Application.
- Search: Search for the session data as an active or completed session.
- Replay: Replay of the session through Browser-Based Replay and the IBM Tealeaf CX RealiTea Viewer as an active and completed session
- Reporting: Display of data in the Portal as an active or completed session
- Data Export: Export of captured and processed data

Temporary Configuration Changes

The previous steps mirror the generalized flow of data through the solution, which is outlined below.

- All items below apply to completed sessions. Items also marked (`active`) apply to active sessions, too.

General Data Flow of Session Data throughIBM TealeafCX

- Active session begins.
  - (`active`) Session is available for replay in Portal and RTV.
- Session is completed.
- Session is moved from Short Term Canister to Long Term Canister.
- Session is indexed for search in LTC.
  - (`completed`) Session becomes available for search by using completed search templates in the Portal and RTV.

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- Session data is aggregated for reporting purposes.
  - (`completed`) Session data populates Portal reports.
- Session data is trimmed from the Long Term Canister and, optionally, archived.

For testing purposes, you may want to shorten the intervals for some of the steps to hasten the testing process. These intervals can be configured by modifying the following configuration options.

Note: Do not make these changes on a production server. These changes should only be applied in a testing environment and should be reverted when the testing is complete.

- Session is indexed for search in LTC: For more information about configuring indexing, see "Configuring CX Indexing" in the *IBM Tealeaf CX Configuration Manual*.
  1. The control program for indexing (`indexprogram`) checks for sessions that need indexing that is based on the `Sleep Time When No Work` setting.
  2. When sessions are detected that need indexing, the indexing process begins. Indexes are not committed to disk, which enables searching until the `Direct Pull Timeout` setting expires or the index size exceeds the `Maximum Index Size` threshold.
- Session data is aggregated for reporting purposes: By default, the Data Collector polls the Long Term Canister for data to aggregate every five minutes.
  1. If necessary, you can restart the Tealeaf Data Collector Service through the Windows Services Control Panel to immediately perform a data collection. However, you must be certain that the data to be collected is already generated for this step to work.

Installation

Before you begin, install the components listed here, if you have not already done so.

- Client-Side Capture: The Tealeaf Client-Side Capture is a plug-in for Fiddler that enables the capture of your IE navigation experience to your local desktop. The session that you explore on the monitored web application is captured locally as a control to test the results of capture, processing, and replay through Tealeaf's replay features.
  - For more information about installing Client-Side Capture, see "Using Client-Side Capture for Fiddler" in the *IBM Tealeaf Client-Side Capture Manual*.
- **IBM Tealeaf CX RealiTea Viewer:** The RTV application can be installed on the desktop systems of Tealeaf users to enable the search and replay of session data. Additionally, through RTV, users with the appropriate permissions can edit event definitions that are applied to the Tealeaf capture stream.
  - If RTV is used by Tealeaf users in your enterprise, you should test its capabilities as part of the testing process. For more information about installing RTV, see "RealiTea Viewer Overview" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Some Considerations in Generating Your Test Session

Before you capture your test session, you should consider the following items, which may affect the pages that you attempt to capture.

- Session Identifier: You should decide how you are going to explore the web application in a way that permits you to uniquely identify the session through search and replay. When you test the captured session, you must be able to uniquely identify it.
  - If no unique identifier is available, you may be able to identify the session by timestamps.
  - If you licensed and deployed IBM Tealeaf cxResults, you can use the visitor identifier that you configured for the product. See "Initial cxResults Configuration" in the *IBM Tealeaf cxResults Administration Manual*.
- Tracking Event: You should design your session so that you trigger at least one known event that you configured for the web application. Later, you can use this event as a key for digging through Tealeaf report data to locate the completed session.
- Scorecard: For testing report features, you should trigger an event that registers in a KPI or Process Scorecard.
  - For more information about KPI scorecards, see "Using Scorecards" in the *IBM Tealeaf cxView User Manual*.
  - For more information about Process scorecards, see "Using Scorecards" in the *IBM Tealeaf cxView User Manual*.
- PCA: Before capture, you may want to open the Summary tab of the PCA Web Console, where you may be able to monitor the traffic if there is little other activity on the web application.
  - If you have enabled data filter rules, configured traffic to ignore, or other tuning parameters, you may want to design your capture session so that you test these settings. For example, if you know of specific host traffic that is configured to be ignored, you should design your session to generate session data from that host, which is forwarded to the PCA and then ignored. See "PCA Web Console - Interface Tab" in the *IBM Tealeaf Passive Capture Application Manual*.
  - If the PCA is capturing some SSL traffic, you should design your session to explore secured areas of the web application. See "PCA Web Console - Interface Tab" in the *IBM Tealeaf Passive Capture Application Manual*.
  - The PCA supports data sessioning, multiple capture modes, inclusion and exclusion of specific file extensions, and other features. You should be able to design your capture to identify that the captured and processed data properly reflects capture mode, file extension settings, and any data sessioning configuration that is managed through the PCA. See "PCA Web Console - Pipeline Tab" in the *IBM Tealeaf Passive Capture Application Manual*.
  - The following configuration areas may require separate captures in order to test them well.
  - Privacy rules that are applied at the PCA should be thoroughly tested. Depending on the complexity of your configured rules, you should consider reviewing each of them through a separately captured session. See "PCA Web Console - Rules Tab" in the *IBM Tealeaf Passive Capture Application Manual*.
    - Privacy Tester rules can also be tested through the external Privacy Tester utility. See "Privacy Tester Utility" in the *IBM Tealeaf CX Configuration Manual*.
- TMS: No additional tests are required. See "Initial TMS Configuration" in the *IBM Tealeaf CX Configuration Manual*.
- **IBM Tealeaf cxImpact:** No additional tests are required. See "Initial Portal Configuration" in the *IBM Tealeaf CX Configuration Manual*.

- Pipeline: No additional tests are required. See "Initial Portal Configuration" in the *IBM Tealeaf CX Configuration Manual*.

Optional Components

- RTV: RTV tests are included as part of the workflow in this testing procedure.
- IBM Tealeaf cxResults: The key criteria for configuring IBM Tealeaf cxResults are establishing a unique, multi-session identifier for each visitor and being able to search for visitors. See “Testing for Unique cxResults Identifier” on page 64.
- IBM Tealeaf cxReveal: No additional tests are required. See "Initial cxReveal Configuration" in the *IBM Tealeaf cxReveal Administration Manual*.
- IBM Tealeaf CX Mobile Module: Optionally, you can perform these tests by using a mobile device to verify proper configuration of the IBM Tealeaf CX Mobile module. See “Testing for Mobile Visitors” on page 64.
- IBM Tealeaf cxConnect for Data Analysis: No additional tests are required. See "Initial cxConnect Configuration" in the *IBM Tealeaf CX Configuration Manual*.
- IBM Tealeaf cxVerify: No additional tests are required. See "Initial cxVerify Configuration" in the *IBM Tealeaf CX Configuration Manual*.

To capture all of the above configuration items, you may decide to perform multiple captures of different aspects of the web application. Since some of the following tests are applied while the session is still active, you should perform all of the tests on the page for the first session before you begin capture and testing of any subsequent sessions.

- See “Capturing Additional Test Sessions” on page 64.

Generate Session

1. Open Internet Explorer.
2. Browse to the home page of the web application.
3. Start Client-Side Capture.
4. Note the time at which you started local capture. This timestamp should be correlated to the timestamps that later appear in the Portal.
5. Navigate to the pages in the web application that you must capture to complete the tests of the above systems.
6. Do not close the session. Continue with the following tests.

   Note: Depending on the data volume, network throughput, and server performance, there may be a delay between beginning your session and hits appearing in Tealeaf.

Active Session Tests

The following tests can be applied to the active session you are currently capturing.

Capture

If you are in a production environment with general web traffic, you may not be able to test for the capture process only. It may not be easy to detect the hit data for your specific active session through the PCA Web Console or the Windows pipeline, which receives the PCA data.

However, if you are in a test environment with no other traffic, you may be able to verify capture by monitoring the following sections in the Summary Tab of the PCA Web Console:

- Current Per Seconds Stats section indicates the transfer rates of each PCA process through the pipeline.
- Peers section indicates delivery of PCA data to the destination Processing Server and its Windows pipeline.
- See "PCA Web Console - Summary Tab" in the *IBM Tealeaf Passive Capture Application Manual*.

Reporting

Through the Portal, you can review all active sessions. From the **Portal** menu, select **Active** > **Sessions**. The session list displays all active sessions. If you are able to locate the session that you are currently creating, then you verified that the Windows pipeline is working properly.

- In the Portal session list, you can click the **Info** icon to review session information for verification purposes. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

In the Session List, click the **Pages List** icon to display a list of pages in the session. You can drill into individual pages to review captured data. This area is useful for reviewing Windows pipeline operations, such as privacy, Tealeaf reference values, and more.

- You can also replay the active session from this screen.
- See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Search

To search for active sessions through the Portal, select **Search** > **Active Sessions**. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

- If you triggered a known event in your session, you can search by that event for sessions.
- To search for active sessions in RTV, click the Search Active Sessions check box in the Search Builder tab. For more information about RTV search, see "RealiTea Viewer - Session Search and Subsearch" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Replay

If you find the active session in the Portal, you can click the **Camera** icon in the Session List to replay the session.

- Depending on your configuration, you may be able to use the method to replay in the Portal, RTV, or both. See "CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*.
- For more information about RTV replay, see "RealiTea Viewer - Replay View" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Completed Session Tests

If you successfully completed the tests, then you can end the session at which point it is queued for transferred to the Long Term Canister for indexing.

- Stop your Client-Side Capture, and save the capture file to a local directory.

Capture

No additional testing is required.

Search

If you are able to find your completed session by using a completed session template, then you verified indexing operations. Specifically, you should perform a search for known data in the `[appdata]` section of the request, which is always indexed.

- If you triggered a known event in your session, you can also search by that event for sessions.
- See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.
- For more information about RTV search, see "RealiTea Viewer - Session Search and Subsearch" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Searching for Visitors

If you enabled IBM Tealeaf cxResults, you can perform a search for the session that is based on the visitor identifier. When you drill down into the results, you should be able to retrieve the same session as above.

- For more information, "Searching for Visitors" in the *IBM Tealeaf cxResults User Manual*.

Replay

In the Session List page, you can click the **Camera** icon to replay the session. For replay in this case, verify the following against the version you captured by using Client-Side Capture:

- Verify the page counts of each capture.
- Verify that the last page of each capture corresponds to the other capture.

For RTV:

- Look at several pages in the RTV capture to verify that all meaningful content is displayed.
- If highlighting is enabled in RTV, check that the appropriate page elements have been properly highlighted.
- If UI Capture is deployed in your web application, then you should verify that a selection of UI events is captured and displayed appropriate in RTV.
  - UI Capture requires a separate deployment of JavaScript into your web application infrastructure. See "UI Capture for AJAX Guide" in the *IBM Tealeaf UI Capture for AJAX Guide*.

Discrepancies between the Tealeaf replay and your CSC replay should be reconciled by using replay rules in your profile.

- See "RealiTea Viewer - Profile Options" in the *IBM Tealeaf RealiTea Viewer User Manual*.

Reporting

Event reporting

If the events for your captured session tabulated for reporting purposes, complete the following steps.

1. In the **Portal** menu, select **Analyze** > **Report Builder**.
2. Click **Add Event**.

3. Select the event that you triggered in your captured session. Click **Select**.
4. Verify that the Focus Date is configured for today or the date when you created the session.
5. Click **Refresh** if necessary.
6. In the displayed chart, find the hour during which the session was made. If you cannot find the appropriate link, click the **Total** link at the bottom of the display.
7. The list of relevant sessions is displayed. Find your session in the displayed list.
8. If you are able to complete the test, then you verified that event data from your session is available for reporting.
   - See "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.

Aggregated data reporting

Identify if the aggregated data from captured session is tabulated for reporting purposes, complete the following steps.

1. In the **Portal** menu, select **Analyze** > **Scorecards**. The Scorecards screen is displayed.
2. Verify that the Focus Date is configured for today or the date when you created the session.
3. For Focus Period, select `Day`.
4. Click **Change**. Select a scorecard that includes events that are triggered during your captured session. Click **Select**.
5. Click **Refresh** if necessary.
6. In the displayed scorecard, click a link that displays a count of sessions for the event that was triggered during your capture.
7. An event chart for the selected event is displayed.
8. In the displayed chart, find the hour during which the session was made. If you cannot find the appropriate link, click the **Total** link at the bottom of the display.
9. The list of relevant sessions is displayed. Find your session in the displayed list.
10. If you are able to complete the test, then you verified that your session data is being aggregated for reporting.
    - See "Using Scorecards" in the *IBM Tealeaf cxView User Manual*.

Data Export

You can test the data export features of the Tealeaf system by completing the following procedures.

Export Chart

1. From the **Portal** menu, select **Analyze** > **Report Builder**.
2. Select an event, reporting period, and server options so that you can see data display on-screen.
3. Use the buttons in the upper-right corner to test export to Microsoft Excel and PDF.
   - See "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.
4. Verify the data in the exported chart against the displayed version.

Export Scorecard

1. From the **Portal** menu, select **Analyze** > **Scorecards**.
2. Select a scorecard and reporting period that contains data.
3. Use the buttons in the upper-right corner to test export to Microsoft Excel and PDF.
   - See "Using Scorecards" in the *IBM Tealeaf cxView User Manual*.
4. Verify the data in the exported scorecard against the displayed version.

Export Dashboard

1. From the **Portal** menu, select a dashboard from the **Dashboards** menu.
2. Verify that the dashboard contains meaningful data.
3. In the upper-right corner, click **Options**.
4. Email the dashboard to yourself.
5. A PDF version of the dashboard is attached to the email. Verify the data in the exported dashboard against the displayed version.

Capturing Additional Test Sessions

You may want to create sessions to test the following situations:

Testing for Mobile Visitors

If you enabled the IBM Tealeaf CX Mobile module, you can perform the tests by using a mobile device to verify that Tealeaf is properly configured to capture mobile user activities.

Testing for Unique cxResults Identifier

If you licensed and enabled IBM Tealeaf cxResults, generate and close a second session to verify that you generated a visitor identifier in the session list that matches two sessions. See "Analyzing Visitor Segments" in the *IBM Tealeaf cxResults User Manual*.

Alerts

If you enabled the alert service, complete the following procedure to test alerts.

- For more information about enabling the alert service, see "Configuring the Alert Service" in the *IBM Tealeaf CX Configuration Manual*.

This procedure defines an alert that is triggered when the number of active sessions is greater than 1. After you define the alert and commit your changes, when you begin exploring the web application, you should receive an alert email.

- Alerts are generated through the Event Manager in the Tealeaf Portal. See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.
- For more information about configuring alerts, see "TEM Alerts Tab" in the *IBM Tealeaf Event Manager Manual*.

1. Log in to the Portal as an administrator.
2. In the **Portal** menu, select **Configure** > **Event Manager**.
3. In the Tealeaf Event Manager, click the **Alerts** tab.
4. Click **New Canister Alert**.
5. Click the Active check box.
6. For Alert Type, select `Count`.

7. Click **Select Event**. Select the **Active Sessions** event.
8. For Alert Function, select `Positive`.
9. Click the Alert Threshold Only check box.
10. In the **Threshold** text field, enter a value of `1`.
11. For Interval, enter a value of `100`.
12. For Reset, enter a value of `100`.

    Note: This alert should fire only one time. After you verified the test, modify the alert properties or delete the alert.
13. Clear the **Enable Warnings** check box.
14. In the Notification panel, select the email check box and clear all other check box.
15. Enter your email address in the space provided.
16. In the Blackout panel, verify that the Enable Alert Blackout check box is not selected.
17. Click **Save Draft**.
18. The Alert should be displayed in red in the Alerts tab.
19. To commit the changes to the server, click **Commit Changes**.
20. Open a browser window to explore the application that is monitored by Tealeaf.
21. Open a second browser to explore the application. You should now have two active sessions, which exceed the alert threshold.
22. A copy of the alert should be emailed to you.
23. Remember to delete the alert after you received and reviewed it.
    - See "TEM Alerts Tab" in the *IBM Tealeaf Event Manager Manual*.

Next Steps

If all of the tests complete successfully, your Tealeaf solution is operational.

Remember to switch any temporary configuration settings back to their previous values. See “Temporary Configuration Changes” on page 57.

Chapter 11. IBM Tealeaf documentation and help

IBM Tealeaf provides documentation and help for users, developers, and administrators.

Viewing product documentation

All IBM Tealeaf product documentation is available at the following website:

https://tealeaf.support.ibmcloud.com/

Use the information in the following table to view the product documentation for IBM Tealeaf:

Table 5. Getting help

To view...	**Do this...**
Product documentation	On the IBM Tealeaf portal, go to **?** > **Product Documentation**.
IBM Tealeaf Knowledge Center	On the IBM Tealeaf portal, go to **?** > **Product Documentation** and select *IBM Tealeaf Customer Experience in the ExperienceOne Knowledge Center*.
Help for a page on the IBM Tealeaf Portal	On the IBM Tealeaf portal, go to **?** > **Help for This Page**.
Help for IBM Tealeaf CX PCA	On the IBM Tealeaf CX PCA web interface, select **Guide** to access the *IBM Tealeaf CX PCA Manual*.

Available documents for IBM Tealeaf products

The following table is a list of available documents for all IBM Tealeaf products:

Table 6. Available documentation for IBM Tealeaf products.

IBM Tealeaf products	**Available documents**
IBM Tealeaf CX	• *IBM Tealeaf Customer Experience Overview Guide* • *IBM Tealeaf CX Client Framework Data Integration Guide* • *IBM Tealeaf CX Configuration Manual* • *IBM Tealeaf CX Cookie Injector Manual* • *IBM Tealeaf CX Databases Guide* • *IBM Tealeaf CX Event Manager Manual* • *IBM Tealeaf CX Glossary* • *IBM Tealeaf CX Installation Manual* • *IBM Tealeaf CX PCA Manual* • *IBM Tealeaf CX PCA Release Notes*

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Table 6. Available documentation for IBM Tealeaf products (continued).

IBM Tealeaf products	Available documents
IBM Tealeaf CX	• *IBM Tealeaf CX RealiTea Viewer Client Side Capture Manual* • *IBM Tealeaf CX RealiTea Viewer User Manual* • *IBM Tealeaf CX Release Notes* • *IBM Tealeaf CX Release Upgrade Manual* • *IBM Tealeaf CX Support Troubleshooting FAQ* • *IBM Tealeaf CX Troubleshooting Guide* • *IBM Tealeaf CX UI Capture j2 Guide* • *IBM Tealeaf CX UI Capture j2 Release Notes*
IBM Tealeaf cxImpact	• *IBM Tealeaf cxImpact Administration Manual* • *IBM Tealeaf cxImpact User Manual* • *IBM Tealeaf cxImpact Reporting Guide*
IBM Tealeaf cxConnect	• *IBM Tealeaf cxConnect for Data Analysis Administration Manual* • *IBM Tealeaf cxConnect for Voice of Customer Administration Manual* • *IBM Tealeaf cxConnect for Web Analytics Administration Manual*
IBM Tealeaf cxOverstat	*IBM Tealeaf cxOverstat User Manual*
IBM Tealeaf cxReveal	• *IBM Tealeaf cxReveal Administration Manual* • *IBM Tealeaf cxReveal API Guide* • *IBM Tealeaf cxReveal User Manual*
IBM Tealeaf cxVerify	• *IBM Tealeaf cxVerify Installation Guide* • *IBM Tealeaf cxVerify User's Guide*
IBM Tealeaf cxView	*IBM Tealeaf cxView User's Guide*
IBM Tealeaf CX Mobile	• *IBM Tealeaf CX Mobile Android Logging Framework Guide* • *IBM Tealeaf Android Logging Framework Release Notes* • *IBM Tealeaf CX Mobile Administration Manual* • *IBM Tealeaf CX Mobile User Manual* • *IBM Tealeaf CX Mobile iOS Logging Framework Guide* • *IBM Tealeaf iOS Logging Framework Release Notes*

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